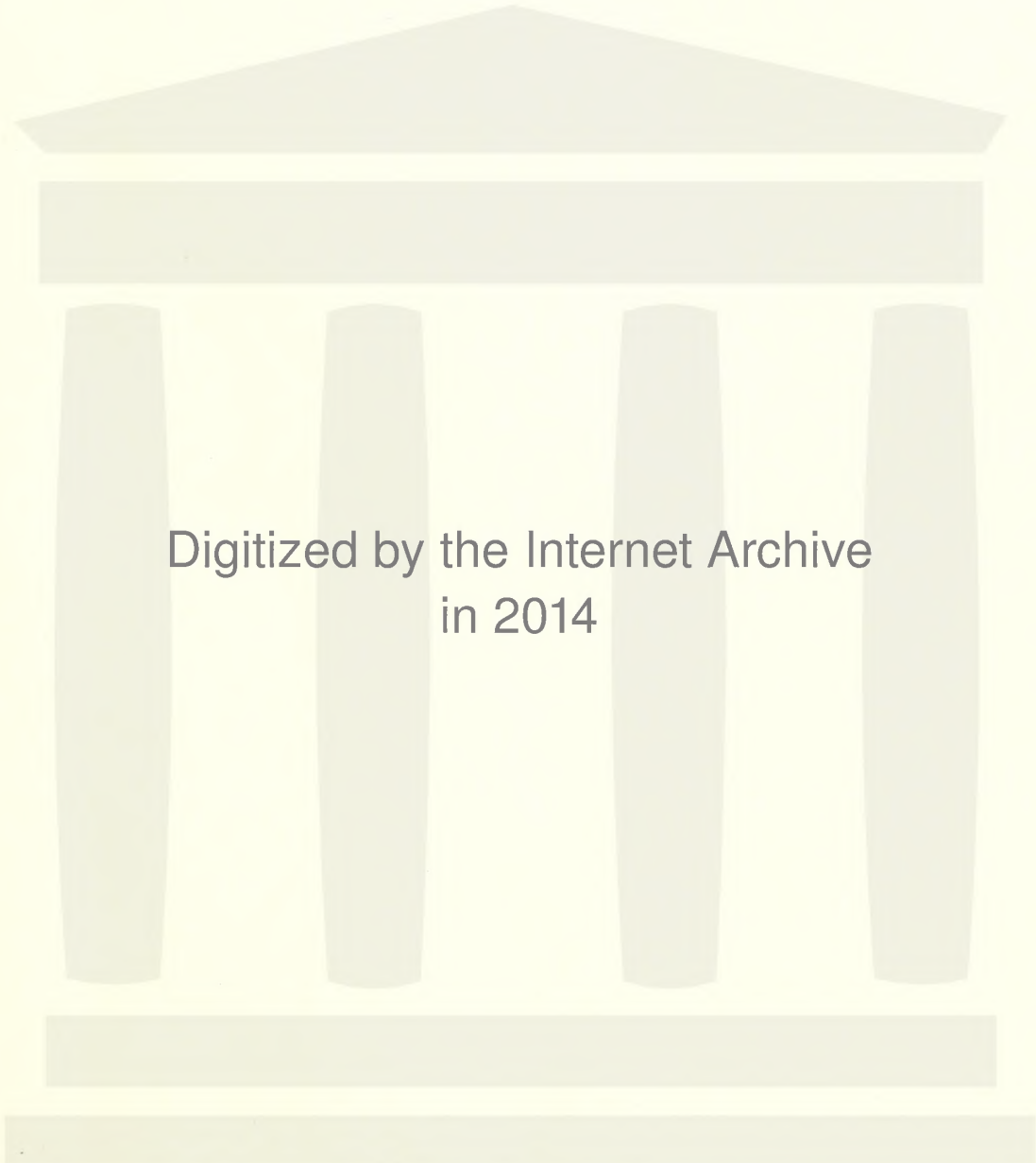

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Wildlife

IN NORTH CAROLINA

TEN CENTS JANUARY • 1954

Photo by Jack Dermid

Bewildered Frustration

The expression on the face of this fox portrays complete bewilderment, frustration, and no little anger. It was treed by hounds at the Nags Head Valentine's Day fox hunt several years ago, and captured bare handed by Ira Partridge, one of the fox hunters. See pages four and five for details of capture.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

WILLIAM B. UMSTEAD
Governor

North Carolina Wildlife Resources Commission

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COVER

The striped skunk is one of North Carolina's rarer furbearing animals, occasionally seen—or smelled—along the highways at night.

☆ ☆ ☆

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Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Anne Taylor ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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Treed, Br'er Fox looks down at the camera and his would-be captors.

Ira Partridge climbs up—with considerable caution.

TAR HEEL

If someone says you are "crazy—like a fox," consider yourself complimented. Remember the tales of the "The Fox and the Grapes," "The Fox and the Wolf," and other immortal parables by Aesop? These testify to the intelligence and cunning of the fox.

No other North Carolina animal is subject to more pro and con discussion than the fox. Fox hunters love the species. Quail and rabbit hunters are all-out for wholesale and complete extermination of foxes. Much of the invective directed against foxes is completely groundless. The fox cannot be compared with a saint, and at the same time should not be condemned as a criminal. His living habits place him somewhere between the two extremes, although he will often shift from one extreme to the other.

North Carolina is blessed — or cursed — with two species of foxes, depending on the individual attitude toward the breed. Most abundant is the gray fox, *Urocyon cineroargenteus,* (which, translated loosely from Greek, means "ashy-silver dog tail"). Less common is the red fox, *Vulpes fulva,* (Latin for "yellow fox"). Because of many similarities between the two animals, they will be discussed together and important differences pointed out.

History

Like many other animals, foxes play an important part in the literature of the world. Aesop composed his famous fables many years before the birth of Christ. Many legends have sprung up regarding the fox, some so persistently that it is difficult to separate them from actual fact. Perhaps the most interesting one is also the greatest tribute to the foxes' cunning. It has to do with the unique manner of getting rid of fleas. The fox takes a tuft of wool in his mouth and wades slowly out into a pond or stream, giving his parasitic lodgers time to make their way up toward the back and head to keep dry. As the fox slowly submerges, the fleas are forced forward to the tip of the nose, and finally crawl into the tuft of wool. When the fox is completely immersed the fleas are left stranded in the wool and the fox is rid of the infestation. The Encyclopedia Britannica gives considerable credence to this legend.

Civilization, to a limited degree, has benefited the fox. Both the red and the gray prefer an open timber habitat, and the clearing of land for agriculture has created a suitable environment in this state. The value of fox furs was recognized by early settlers, and huge quantities were obtained from the Indians and shipped to Europe. The fur of the red fox is far superior to that of the gray in color and texture. Due to the levying of luxury taxes on fur trimmed garments, the demand for fox furs has been very low in recent years.

Photos by Jack Dermid

Brought to hand, the fox's struggles are futile.

A moment later the fox was again released. This time the fox got away from the hounds.

FOXES

by Rod Amundson

(Reprinted by Request)

General Description

Other than to point out certain differences between red and gray foxes, a description of the species is not necessary. The gray is the smaller of the two animals, ranging from seven to eleven pounds; the red fox ranges from eight to fourteen pounds. Although the smaller of the two, the gray fox has longer legs, proportionately. Both have characteristically bushy tails, erect, pointed ears, and rather long, pointed muzzles. There are so many color variations among individuals that often an examination of the skull is necessary for accurate identification. Red foxes may produce color variants in the same litter, with normal, silver, and cross variations in the same brood. The furs of silver foxes, raised in captivity and once highly prized by fashionable women, are nothing more than a color variation of the red fox. The same is true of black and cross foxes. The brick-red of the underparts of gray foxes sometimes extends up over the back, giving an appearance very similar to the red species.

Breeding Habits

Both red and gray foxes are den animals, and the dens may be anything from hollow trees to crevices in rocks to burrows in the ground. Both species will use the dens of badgers and woodchucks when such dens are convenient. The gray, however, is the most consistent denner.

In these dens the young are born, from two to five per litter in the gray fox and from three to ten in the red. Only one litter per year is born, and birth usually takes place in April or May, although March litters are not uncommon in North Carolina.

At birth foxes are fully developed except that the eyes do not open for several days. Usually they remain within the dark interior of the den until their eyes have opened and they have gained sufficient growth and vigor to make their way out to the sunny slopes where the dens are usually located. Their first appearance into the world of sunshine is about six weeks after birth. At this time they are old enough to eat solid foods, and it becomes a duty and a task for both parents to bring home a variety of foods which are obtained on foraging expeditions about the countryside. There are definite and close family ties throughout the breeding season. Once a female fox has accepted a mate, the pair remain together until the final breaking-up of the family during the fall months.

Young foxes closely resemble puppies in general behavior. They are extremely playful and spend hours on sunny hillsides near the den, wrestling and playing together, executing miniature battles and playing tug-of-war with sticks and bones.

Modern fox hunting, Dare County Style, involves cars and jeeps and beach buggies instead of horses. Fox hunting is a popular sport with Tar Heels.

Food Habits

Although foxes are classified as carnivores (meat-eating) their food is obtained from a wide variety of sources. If their food were confined only to the acorns, berries, fruits, and other vegative matter that is frequently included in their diet, foxes would not present the serious game management problem that their habits have created. The vast range of foods which appeal to the palate of the fox lets him in for considerable difficulty. In any discussion of the food habits of the fox, it should be remembered that they are like any other animal, human beings included: they are inherently lazy, and following the line of least resistance, will reap benefit from the livelihood that is most easily obtained. Here are some of the more important items in the fox diet, although not necessarily in the order of importance: mice, rabbits, moles, shrews, woodchucks, snakes, lizards, frogs, crayfish, birds (any kind the fox can catch), newborn lambs, poultry, small turtles, shrimps, field corn, acorns, fruits, berries, and even roots and grasses.

The above list of foods, although incomplete, holds the key to why foxes can be considered valuable animals as well as pests. If foxes were to be suddenly and completely eliminated from the list of North Carolina's animals, the agriculture of the State would soon be in a state of complete collapse. As mentioned before, foxes take foods which are most readily obtainable. The most abundant of fox foods are rodents. Rodents are notorious destroyers of crops. If foxes did not keep rodent poulations in check it would be impossible to raise any kind of field crop with the possible exception of tobacco. It appears that a few quail and chickens taken by foxes now and then are a small price indeed to pay for the protection to crops given by the rodent-consuming habit of foxes.

Rabbits are an important item in the diet of foxes, but this fact is by no means sufficient to warrant the wholesale destruction of foxes by hunters who enjoy rabbit shooting as their favorite sport. Rabbits are extremely prolific, and game census surveys carried on scientifically by Wildlife Resources Commission personnel have shown that both rabbit and foxes are abundant in many identical localities. A shortage of foxes might easily cause an increase in rabbit populations to the damage point.

Thousands of dollars have been spent in many states, including North Carolina, on studies of fox food habits. Trained scientists have analyzed the contents of the stomachs of foxes taken throughout the United States during every month of the year. None of the analyses have indicated that game birds of any kind appear with dangerous frequency in the fox diet. Foxes do eat quail, when quail happen to be a convenient source of food. They also take ruffed grouse and undoubtedly kill an occasional wild turkey. It must be admitted, however, that foxes and quail and turkeys existed and got along quite well together in this country long before the New World was ever dreamed of, and Man's interference with the natural balance among wildlife species does not justify the willful extermination of any particular species regardless of how damaging one species might seem to be to another.

To refer again to the concept that foxes prefer foods which are readily obtainable, poultry raisers who have suffered nocturnal raids on their poultry houses find it difficult to give the fox a place among desirable wildlife species. When a fox discovers that an abundance of food is available by the simple means of snatching a hen from the poultry roost, the roost is likely to be visited with considerable frequency. In such cases it is necessary to destroy foxes in order to protect property. Fortunately, relatively few foxes acquire a taste for poultry or the knowledge that barnyard fowl are easily attainable. The destruction of these few foxes usually correct the situation locally.

Management

The management of a species which is subject to so much controversy among sportsmen and farmers resolves itself almost entirely to a problem of public relations. Somehow quail and rabbit hunters must be convinced that in ordinary circumstances the presence of an abundance of foxes does not mean that rabbits and quail are placed in danger of extinction. At the same time, fox hunters, who naturally are interested in maintaining a high fox population, must realize that an over-abundance of foxes might upset an already precarious natural balance among species whereby foxes might destroy their food supply and thus destroy themselves. Farmers will tolerate foxes only so long as they do not prey on poultry, and under the U. S. Constitution, have a right to destroy marauding foxes at any time and in any manner. But they should remember that a few erring individuals do not warrant condemnation of the entire species.

Biologists have learned that there is never any justification for the wholesale slaughter of any species, regardless of how undesirable the species may become in isolated instances. Slowly but surely sportsmen throughout the country are coming to the conclusion that money spent for bounties and wholesale predator control is sheer waste.

Where fox populations (particularly the red fox) are not sufficient to supply the needs of fox hunters, protective measures become necessary, and importation should at least be tolerated. Where an over-abundance of foxes occurs, control measures should be instituted—but never with complete annihilation as an objective.

The crux of fox management lies in determining the level at which fox populations should be maintained, and then getting diversified factions of public opinion to cooperate.

Hunting and Trapping

The sport of fox hunting is second only to falconry in antiquity, having been practiced in Europe for centuries. In general, North Carolina fox hunting has not reached the social pinnacle of pink coats and purebred Hunter mounts, but the number of fox hunting organizations and fox hunting sportsmen attests to the popularity of the sport in this State, particularly in the Piedmont and Mountain sections. There are varied manners and codes of ethics in North Carolina fox hunting, but for the most part the enjoyment of the sport comes from the fellowship of the hunters and the pride they take in the voice and stamina of their dogs. The foxes are sometimes killed by the dogs, but as often as not, the fox escapes to be put up and run another day, and a hunter who shoots a fox is in danger of permanent ostracism from his society.

Anyone who has participated in a fox hunt can well understand why fox hunters love their sport, and why fox hunters are interested in the perpetuation of the species even to the point of importing foxes to stock certain areas.

Fox hunts usually begin with the mutual consent of dog owners who meet at an appointed stand with the dogs and release the pack at one time. While the dogs are ranging about the woods and fields in search of a scent, the owners build a fire and sit down to await the rhapsodic symphony of music which begins when a fox is put to flight. Lulls in the music, when the fox has led the hounds out of earshot, are filled with tales of fabulous feats accomplished by the dogs of justly proud owners. The friendly campfire repartee is often interrupted by the belling of the hounds as the fox approaches the starting site. Most dog owners can, or at least claim they can, tell their own dogs by the sound of their voices, and as the pack and the prey pass out of earshot again, arguments are apt to arise as to whose dog or dogs are in the lead.

Sometimes the pack kills the fox and the tail is cherished as a trophy. But more often the fox gets away, and the remainder of the night is spent in an attempt to assemble together wandering dogs.

The red fox is considered by hunters to be far

•——————————See FOXES Page 15

Here is a litter of young red foxes peering curiously from their den.
(Photo Courtesy Pennsylvania Game Commission)

This panoramic view shows the use of multiflora rose in contour farming and a rotation grazing scheme.

BR'ER RABBIT'S

Down through the years, Brer Rabbit and the Briar Patch have been synonymous. This association is, perhaps, the first lesson in woodcraft learned by the novice hunter and, undoubtedly, among the first ecological facts uncovered by the youth who is interested in the habits and haunts of wild creatures. Remember, as a boy, your scouting trips to find a likely spot to set a rabbit "gum"? If you are of the writer's generation, you probably gave careful consideration to the brushy borders of old rail fences, which were prevalent in those days. If a "gnaw" between the lower rails of the fence was found, the problem of a suitable site for the trapping operation was solved. This aperture was a dead give-away that Brer Rabbit lived nearby, and chances were good that he used this tunnel as a short cut to favorite clover fields in his nightly foraging expeditions.

Now, the rail fence, per se, seemed of no particular value to friend rabbit. In fact, its presence made necessary the engineering project to which we have referred as a "gnaw." Nevertheless, the rail fence was the foundation of Brer Rabbit's home! Its zig-zag course across the landscape assured an eight-foot-wide strip of land safe from molestation by normal farming operations of that era. In the multiple corners effected by the staggered pattern of the rail fence, nature provided ample homes for Brer Rabbit, his family and numerous relatives. Here blackberry brambles, grapevines, wild rose, various shrubs and other vegetation grew in profusion and combined to create the proverbial "Briar Patch."

Then, too, the rail fence served as a safe travel lane to and from preferred feeding areas. Somewhere along its course it was sure to border: pastureland, where succulent clover and grasses flourished; cropland, where waste grain, peas and beans provided high protein food during rigorous winter weather; forestland, where tender roots and bark could be found to supplement the diet. Seldom was it necessary to travel very far from the rail fence, and its inevitable briar patch, in search of food.

Predation by natural enemies, hunting pressure and other decimating factors were then present, as they are today. The market hunter took his toll, and many citizens depended upon rabbit stew as a staple in their food supply. However, favorable environmental conditions existing during the rail-fence era made possible a yearly rabbit population equal to the heavy demand. This was the golden age for Brer Rabbit and his tribe!

Came the day when rail fences no longer fit into the modern agricultural picture: Dwindling forests caused a scarcity of materials for rails, and increasing labor costs made the construction and maintenance of rail fences impractical. The modern wire fence took over; the eight foot strip of land—once protected by the rail fence was plowed for crop or pasture, and a favorite haunt of rabbits, quail and other farm game was gone with the wind.

The passing of the rail fence forced Brer Rabbit to move his homesite to one of the few remaining, but less desirable, briar patches in ravine, odd corner, ungrazed wood lot or other out-of-the-way place. In these environs, he made a valiant attempt to carry on as usual in the face of mounting adversities. Food became more abundant as improved pasture, winter cover crops and other better-farming practices were introduced, but the wire fences afforded no protection as travel lanes. Trips to feeding areas became more and more hazardous. Natural predation continued apace, and hunting pressure increased by leaps and bounds. The market hunter

BY TED MITCHELL

faded from the scene, but his excessive take of game was claimed by an ever-increasing army of sportsmen, endowed with more leisure time for hunting, better means of transportation and improved hunting equipment. These were dark days for Brer Rabbit! Now, Brer Rabbit is a hearty and resourceful fellow. But this combination of circumstances has caused drastic reduction in the numbers of his kind. His present position is, at best, precarious. His popularity as a game animal makes remote any possibility of lessening hunting pressure. His natural enemies are legion, and show no sign that they will give him a break because his "guard is down." His only salvation seems to be the return of his briar patch —or a reasonable facsimile thereof. In this age of intensive and extensive land utilization, there is little

MODERN BRIAR PATCH

likelihood that the rail fence will make a come-back on the modern farm. Chances are good that many of the few remaining briar patches will fall before the bulldozer as land reclamation and improvement programs progress. Still, there are indications of a brighter future for Brer Rabbit. His chances for getting a modern, better-than-ever housing project are excellent! In fact, the foundation is now being laid! Outstanding progress in the field of scientific farming has been made during the past two decades. It is no longer necessary for farm operators to use guesswork in deciding the best use and treatment for each parcel of land on the farm. Technicians of both state and federal agricultural agencies are active in each county of North Carolina. Their assistance and vast store of know-how are available to all farmers and landowners who are interested in conservation. Practical methods for the proper use and treatment of various soil types have been tested and proved; improved crop rotation and cultivation patterns have been worked out. Many new soil- and water-conserving techniques have been designed for managing "problem areas," where erosion most frequently starts. A complete plan for wise use and conservation of natural resources —soil, water, forest and wildlife—is available to every farm operator.

The principles of conservation farming — proper treatment and use of each acre of land, according to its needs and capabilities—constitute a solid foundation upon which may be built adequate populations of the desirable species of wildlife. However, to assure an annual harvestable surplus, the popular farm-game species require a little special attention in the form of a year-round supply of food and cover. This job usually is left for the busy farmer who, although his intentions are good, sometimes fails to find time for the project. Here's where a healthy, whole-hearted assist from the sportsman will pay big dividends! The sportsman's help may be in one or more of the following forms: (1) By standing the cost of fertilizer and equipment operation for applying conservation practices which are specifically beneficial to game; (2) compensating the farmer's son or tenant for doing the job; or (3)—and best of all —taking an active part in planting food and cover on the farms where he hunts. Seeds and seedlings for such projects are furnished free of charge by the North Carolina Wildlife Resources Commission. The Commission will also furnish technical assistance in planning wildlife habitat development projects. This combination of effort can't miss providing more game, better hunting and improved farmer-sportsman relations!

Among the many tested and proven land-use practices developed to complement modern farm plans, the living fence of multiflora rose is an outstanding example. Progressive farm managers found so-called clean farming neither economical nor practical. Carefully manicured fields and clean fencerows gave that well-kept, park-like appearance, but left the soil exposed to erosion by wind and rainfall. Closely trimmed field borders, ditch banks and odd corners exemplified neatness, but made these areas vulnerable also.

Farmers found that approved land-use plans often called for fences to be run along natural contour lines. They also found erecting and maintaining wire fences on the contour expensive and difficult tasks. Here is a place where multiflora rose fences have proved exceptionally valuable. Living fences fit into almost any farming pattern. They may be started by preparing a strip of land along the course selected for fencing and setting multiflora rose seedlings at one foot intervals. The plants should be fertilized and cultivated during

Soil Conservation Service Photos

Multiflora rose, Br'er Rabbit's modern briar patch, forms a living fence and is ideal farm game cover.

BIOLOGIST, DISTRICT 8

the first growing season, but require very little maintenance thereafter.

In from three to five years, depending up fertility and type of soil, a permanent, stockproof fence will become established. Multiflora rose is also very practical for use in re-enforcing old wire fences nearing the end of their usefulness. When planted on the outside of such fences, the rose-wire combination usually provides a stockproof barrier by the end of the second growing season. Living fences are valuable assets on well-managed farms. More and more farmers are using them in their better-farming programs.

The multiflora rose fence is the long-awaited answer to Brer Rabbit's prayer! This modern version of his briar patch has all the comforts of the old homestead, plus additional features. No longer is a "gnaw" necessary for convenience—or a quick retreat. Rose fences provide many exits and entrances that are just right for Brer Rabbit but wholly inadequate for his enemies. No longer must he dream of lush clover fields beyond his realm of safety. The multiflora rose fence, like the rail fences of old, surely will lead to his favorite feeding grounds. Once more Brer Rabbit can fare forth in quest of food in relative safety. Again he can rest assured that Mollie and the kids are snug and safe in their modern briar patch. Better days are in sight for Brer Rabbit, his family, relatives and neighbors.

We have stated that Brer Rabbit is a hearty and resourceful fellow. His heartiness has been witnessed by all who have hunted him, or thrilled to the music of beagles on clear, frosty mornings. His resourcefulness is demonstrated by ability to survive adverse living conditions. He has many other attributes, including mathematical prowess — especially multiplication! Given a suitable place for domestic activities, he will again provide a source of good hunting for Tar Heel sportsmen and the necessary quarry for beagle enthusists. It, therefore, behooves everyone who admires this popular game animal to encourage the use of practicable, serviceable living fences of multiflora rose—Brer Rabbit's modern briar patch.

The second half of the annual dove season got under way December 28 and runs through January 10. Dove hunters are urged to send in bands from banded birds as an aid to dove management.

PROTECTOR OF THE MONTH

Arthur Pack

Born in Polk County, Mr. Arthur Pack attended Mills Springs Elementary School and Starnes High School. He is now 40 years of age, married, and the father of two boys and two girls. He has twelve years' excellent service as as a Wildlife Protector and is well liked in his section by the public as well as his fellow protectors. His present address is Route 1, Tryon, North Carolina.

Enforcement Record for October

Persons checked	31,442
Prosecutions	499
Convictions	462

A total of $4,174.00 in fines was collected during the month and paid into the school funds of the counties in which the convictions were obtained. Fines were not collected, being either suspended or not levied, in 26.19% of the total number of convictions.

It's the Law!

Question: Is a person required to purchase a hunting license before hunting "unprotected" birds or animals?

Answer: Yes. "Unprotected" birds and animals are those on which there is no closed season. Irrespective of the hunting seasons, however, the law requires the purchase of a license before hunting any species of *wild* animals or birds.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Governor Talmage Visits Tarheelia

Governor Herman Talmage of Georgia and a party of friends spent three days in North Carolina during December hunting geese at Lake Mattamuskeet. Interested in conservation of natural resources, Governor Talmage was impressed with the job being done here with regard to forestry, soils, and wildlife conservation.

* * * *

1954 Fishing Regulations Ready For Anglers

Copies of the 1954 fishing regulations are now available from wildlife protectors and license dealers throughout North Carolina. This year's rules are printed on a smaller, booklet type bulletin for easy reading and reference. State and county fishing licenses, and state and county hunting licenses expire with the calendar year, as do nonresident fishing licenses. Combination hunting and fishing licenses expire July 31.

* * * *

Attention Called to State Wildlife Federation Week

S. I. Stewart, President of the N. C. Wildlife Federation, has announced that the week of January 17-23 has been designated State Wildlife Federation week. During that time special emphasis will be placed on increasing wildlife club membership and a drive to curtail stream pollution on a statewide basis will be launched. See page 12 of this issue for more information.

* * * *

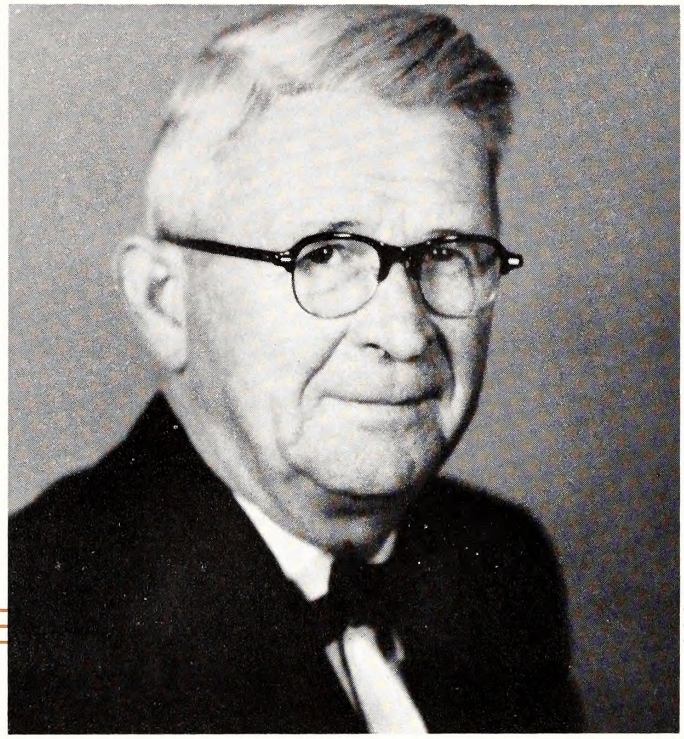
January 15 Is Deadline For Wildlife Quiz Contest

School teachers having students in the seventh to twelfth grades are reminded that they must register pupils wishing to enter the 1954 Wildlife Quiz Contest by the 15th of this month. A registration form on page 17 of this issue may be used for registering pupils. Official quiz forms will be provided to each teacher for distribution among contestants.

* * * *

Wildlife Commission Gets New Quarters

After January 1 the Wildlife Resources Commission's Raleigh office will be located in Glenwood Village, Raleigh, near the corner of Glenwood Avenue and Oberlin Road. For a number of years the Commission's offices have been located in three different buildings and on three different floors in one building. The new offices will make for more efficient operation by having the entire department on one floor. On page 13 is a photograph of the building in which the offices will be located, and a map showing the location oriented to Capitol Square.



S. I. Stewart, Greensboro, President of the N. C. Wildlife Federation.

State Wildlife Federation Week January 17-23

S. I. Stewart, President of the North Carolina Wildlife Federation has announced that the week of January 17-23 has been designated by the Federation as State Wildlife Federation Week. That week will be one of the most important events in the history of the Federation. Emphasis will be placed on wildlife conservation throughout the State, and an all-out membership drive on the part of local Federation chapters.

Stewart said that sporting goods dealers throughout North Carolina will be requested to assist with the membership drive. Dealers will be provided with membership cards and placards announcing that memberships may be obtained at the sporting goods counter or department. In requesting assistance from sporting goods dealers, Stewart pointed out that the people who manufacture and sell hunting and fishing equipment have an obligation to aid in the wildlife conservation program because without an abundant supply of fish and game there would be no demand whatever for fishing tackle, guns and ammunition.

In announcing Wildlife Federation Week, Stewart declared that a strong federation of organized sportsmen is absolutely essential to carrying on and furthering an active program of wildlife conservation in North Carolina.

"North Carolina has gained a national reputation for the type of wildlife conservation program being carried on by our Wildlife Resources Commission," Stewart said, "and the existence of our Wildlife Commission is a direct result of Wildlife Federation activity in this State.

"It is the duty of every conscientious sportsman to concern himself with wildlife conservation activities; and the best possible way to make a real accomplishment is through membership in a wildlife club, and through active participation and leadership in that club's activities.

"The need for conserving wildlife and our other renewable natural resources—forest, soils, and waters—was never greater than it is today. The army of hunters and anglers grows greater each year. Through a progressive conservation program fish and game are relatively abundant in our State, but if we are to continue enjoying hunting and fishing and to increase the abundance of fish and game, we must work together as we have never worked before.

"Therefore I urge every member of every chapter of the State Federation to not only "observe" State Wildlife Federation Week, but to get out and bring in members; and I urge every sportsman in the State to affiliate himself with the Wildlife Federation. Only by working together can we insure the future of our resources. We have a good conservation program going. Let's get behind it and support it and defend it. Let's keep North Carolina green—and let's keep our streams filled with fish and our forests full of game!"

(Editor's note: Mr. Stewart has stated that he will be glad to personally help persons organize wildlife clubs in communities where no club exists or the present club is inactive. His address is N. C. Wildlife Federation, Box 1341, Raleigh.)

Pictured, center above, are the Wildlife Commission's new quarters on the second floor of a Glenwood Village Shopping Center building. Entrances are at either end of the two-story part of the building. The view is from U. S. Highway 70 approaching Raleigh from Durham.

Wildlife Commission Gets New Quarters

Effective January 1 the Wildlife Resources Commission will have new quarters, and for the first time in its history will have its entire Raleigh staff quartered on the same floor in the same building. Pictured above is the building where the offices will be located.

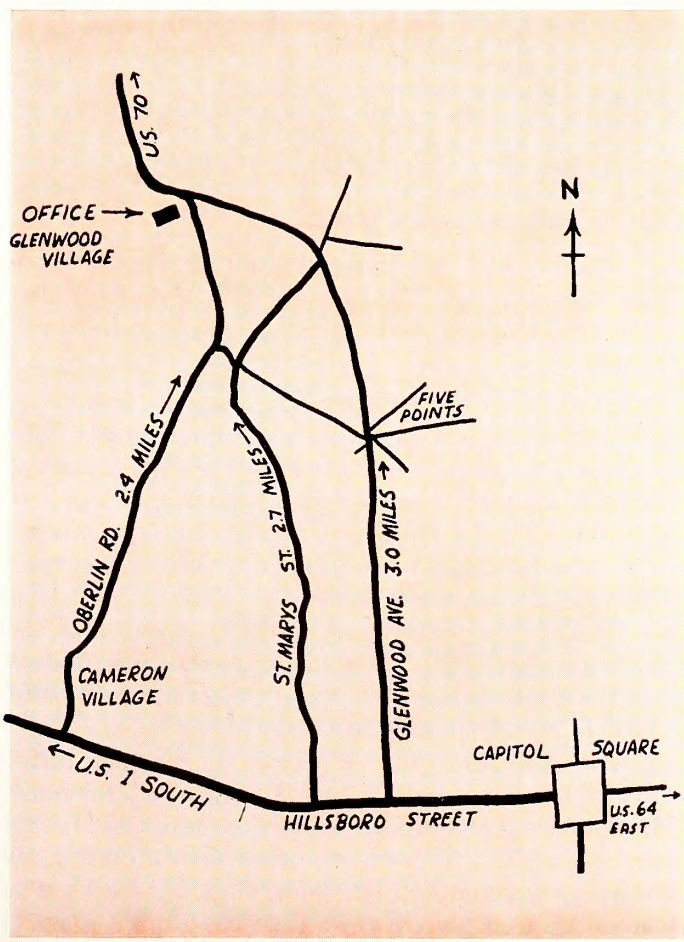
The location is Glenwood Village, one of Raleigh's newest modern outlying shopping centers which lies on the edge of the city limits just off U. S. Highways 70 and 15A in the northwest part of the city.

For a number of years the Commission's offices have been scattered among three separate downtown buildings, with the main offices on three floors of the Morgan Street annex of the Revenue Building. The new quarters will provide adequate storage, filing, and office space for the first time. Clyde P. Patton, Executive Director of the Commission, visualizes greater operational efficiency as a result of having office and storage facilities in the same building.

Persons who plan to call at the Wildlife Commission's new quarters should keep this page for directions on reaching the building.

The color map shows the location of the Wildlife Commission's new offices in relation to Capitol Square, and arterial streets leading to them.

The Commission's postoffice address will remain the same—Box 2919, Raleigh.



School Boy

For Fun

(Part II)

Setting a trap for muskrats. Sometimes mink get in muskrat sets, but not often.

By mid-December muskrats in the area were well furred and a few were prime. A strip of soybeans in corn that Billy's Dad had left in a field adjacent to the creek was holding numerous muskrats. A few mink were still in the vicinity. Miles of other watercourses in the locality also were populated with muskrat, mink and other fur animals. Prospects for a profitable Christmas holiday trap line looked promising.

A roughly sketched map showed a trap line covering three miles of creeks and two ponds. The young trapper planned to trap for only muskrat and mink and to do this he had 45 traps.

Christmas vacation finally arrived and early in the morning of the first day, Billy started out loaded down and in high spirits. Thick frost covered the ground. A bucket of water in the backyard contained ice a half-inch thick, but the creek was flowing freely. Six size 1 traps were placed in water at the base of muskrat trails leading to the cornfield and two similar size traps were placed in underground runs. Luckily, all the trail sets were adjacent to deep water where the trapped muskrats could be easily drowned. Traps at five of the seven mink sets were pulled for use elsewhere. Along two miles of a ten-foot wide stream that flows into the creek on Billy's farm 22 sets were made, 17 for muskrat and 5 for mink. Muskrats were missing along woodland stretches of this stream but plentiful in the vicinity of fields. Fresh mink droppings were noticed on several logs, but tracks were scarce. What appeared to be numerous mink tracks at one place, later were identified as the tracks of gray squirrel. When not clearly seen, squirrel tracks can easily be mistaken for those of mink, especially when they travel trails used by mink. Soft mud along the stream also revealed the tracks of raccoons, weasel, gray fox, deer, wild turkey and at one point, dog-size web-shape tracks thought to be otter. A flock of seven wild turkeys was flushed from dense vine thickets where the big birds were feeding on dried wild grapes. Overland on the way to the ponds the young trapper scared the life out of a snoozing gray fox when he tramped on a low-growing mat of greenbrier. The frightened half-asleep fox must have lost its sense of direction for it scrambled into a bush and turned a somersault in its frenzied attempt to get lost in the woods. By the time Billy had set his last trap in the ponds on his neighbor's land, the youngster was tuckered out and ready to go home. He must have been tired because he sorely wished for the first time in his life that his pet cow, Daisy, could milk herself.

During the next two weeks, except for hard luck at first, good weather and good fortune visited our friend. First trip around the 45-trap trapline resulted in two muskrats caught and nothing else. Five traps were found sprung from unknown causes and much to Billy's dismay, six muskrats had escaped from traps at shallow water sets. The next day, a small female mink was taken at the spring hole set but three more traps contained muskrat feet. Discouraged by these losses, the lad went to his Dad for advice. That night a trip into town was made and six "stop loss" and six "two trigger" traps were purchased. These kinds of traps cost more than ordinary traps but as our friend was to find out, they often pay off the extra cost in a single night. Every shallow water set was replaced with the stop loss type of trap and the next day, 5 muskrats were caught. Three catches were made in the new traps while sets in the ponds produced the other 'rats. The day before Christmas and on several other days nothing was in traps. But on Christmas Day, 4 muskrats, 2 minks and 1 raccoon were caught. What a wonderful Christmas present! The biggest thrill of all, however, was yet to come. By December 31, the catch of fur had dropped off to a muskrat or two. Though only 16, Billy had already learned that the word Conservation means Wise Use so he decided to quit trapping New Year's Day and

Trapping

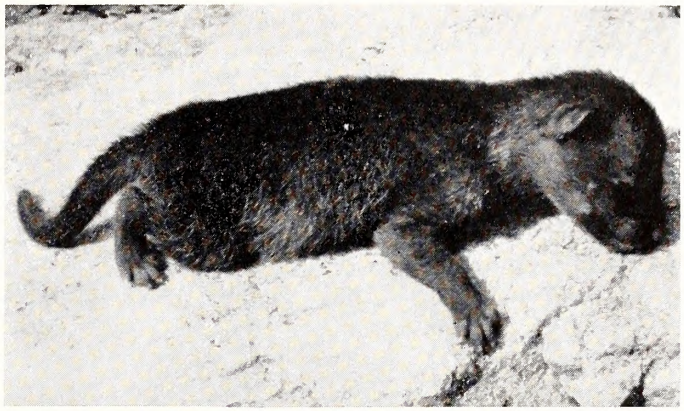
and Profit

by Ken Wilson

leave some seed stock for next year's crop of fur. New Year's Day he left home early to gather up his traps. Reversing his route, he went to the pond traps first and found nothing, traps along the nearby stream did not hold anything either. Thirty-seven traps were weighing down the burlap bag when he rounded a bend on the creek below his house to look at trap number 38—a size 1 trap set for muskrat at the edge of deep water. Eighty feet from the trap, Billy suddenly noticed a large dark object in the creek, just beneath the surface of the water. He unconsciously groaned. Could it be his neighbor's dog? Or the tramp dog that had destroyed the trapped muskrat earlier in December, or a raccoon? No! He was now only twenty feet from the trap. The strange looking animal was dead. Then he recognized the dark brown tapered tail for that of an otter. An otter in a size 1 trap! The lad had heard many stories about the amazing strength of otters and of the large traps required to catch them. He could hardly believe his eyes. Examination revealed the unlucky animal had stepped into a trap that had an additional length of chain. During its desperate struggle the chain wound around the neck, got hooked to a root and the otter drowned. Luck? I should say so! But before Billy had even thought that far, he dropped everything, released the otter's front foot from the trap, scooped its water-soaked body into his arms and hustled for home.

Late that night after skinning the 21-pound male otter, the young trapper tallied up the 46-day season's catch of fur. This is what the lad had caught: 26 muskrats, 7 minks, 3 raccoons, 2 weasels, 2 opossums and the otter. The mink were sold early in January (mink sold between Christmas and New Year usually bring highest prices) and brought $105 or $15 each. By holding the muskrats until February, $41.60 or an average of $1.60 was received. A total of $2.40 was received for the raccoons, $3 for the weasels, 60 cents for the opossums and the otter brought $18. All fur was sold to fur dealers in the state.

Billy Short's trapping efforts netted him $170.60. The lad was not stingy, neither was he a spendthrift. Ten dollars were spent for presents for Mother and Dad and his best girl. But the rest went into the bank toward a college education. Trapping he had learned was hard work but it was also loads of fun and profitable.



Newborn foxes are as blind and helpless as puppies or kittens. This is a baby gray fox dug from the den where it was born.

FOXES

from page 7

superior as a game animal to the gray. Gray foxes frequently take to trees, or are easily overtaken and killed by dogs, thus putting a quick end to the nocturnal opera of the chase. Red foxes, on the other hand, because of their cunning and stamina, may lead hounds in circles throughout the night, or far into the next county.

Quail and rabbit hunters have often become alarmed and irate because fox hunters in some parts of the state have imported red foxes to be released as a supplement to real or imaginary shortages of red foxes. It is extremely doubtful whether such importations can have an important effect on fox populations and the relation of foxes to other game. When it is considered that the total fox population of the state probably numbers in the thousands, a few dozen of red foxes added by importation cannot have any significant influence.

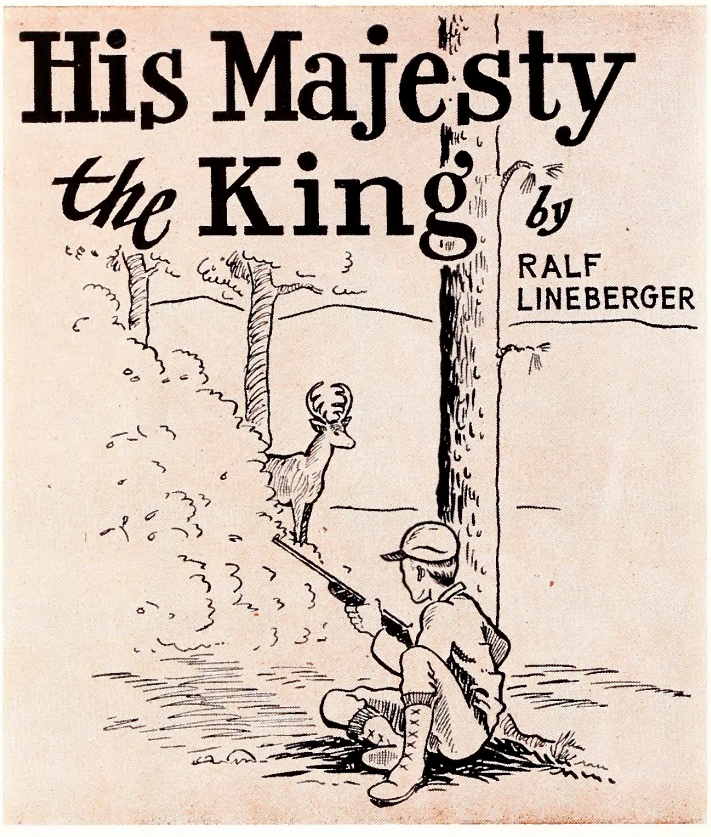
Enemies

Foxes in North Carolina have few enemies other than men and dogs. Horned owls are capable of carrying off kits, and an occasional kit may be killed by wildcats. If the story about the fox and the tuft of wool is to be believed, foxes can take care of their external parasites such as fleas. Healthy foxes, like other healthy animals, are almost never subject to serious infestations of either external or internal parasites.

As is the case with all other wildlife species, Nature uses diesease as a means of controlling excessive fox populations. Peak populations of foxes are invariably attended by outbreaks of diseases. Man's efforts to control fox populations by deliberate attempts at extermination time and again have been proven to be a useless expenditure of energy and money. Without the meddlesome finger of Man, Nature will provide plenty of foxes for devotees of the sport of fox hunting, and at the same time prevent foxes from destroying other game populations.

His Majesty the King

by RALF LINEBERGER



There is no thrill like deer hunting to me. Of all the hunting I have ever done deer hunting is tops. All hunting has its thrills but to walk up to a big buck that you have just downed with a high powered rifle and get ready to bleed him, well there is just nothing to compare with it.

I shall never forget the first meeting I had with his majesty the king. For if there ever was a king it is a big buck deer. He is king of the forest. A king within his own right.

For a good many years I had been wanting to go deer hunting. For one reason or another I just never got round to going. My brother who at that time was serving with the combat engineers in Germany sent me two model 98 Mauser Rifles. This was the final urge that I needed to make me take the hunt. I was very anxious to try out that model 98 Mauser.

In the fall of 1947 a friend of mine, Dick Turner, had a permit to hunt in the Pisgah game preserve. Dick decided that he couldn't go so he gave me his permit. I had the permit changed into my name. Now I was all set.

Odell Harvey wanted me to hunt with him. He had a permit to hunt the same area. Our permits were for the Northern main hunt on South Mills River. Odell and I made our plans together. He said that if we even got a shot we would be lucky.

I had no idea how to go about deer hunting. I had done a lot of squirrel hunting and I had in mind that one should hunt much the same way since it was still hunting. I am now of the opinion that to wait on the deer to come to you is the best way to hunt them. That fellow has radar ears. They can hear the slightest noise. Nine times out of ten he will hear you before you see him.

Odell was an old deer hunter and knew what it was all about. He said that he had known fellows to hunt for twelve or fifteen years and never get a deer. This didn't discourage me. I was too full of enthusiasm to be let down.

Our hunting date came up and I was ready and waiting when Odell came by for me. I loaded up my luggage, and we were off on my first deer hunt.

Well at last we got checked in on that November morning. We were now ready for his majesty the king.

There had been a rainy fall and the forest floor fairly oozed with water. It was an ideal hunting time. One could move around without making much noise. There was a fine crop of acorns and other food for the deer. Man! deer signs were all over the place. It was easy to see that they had been having a feast.

Odell and I agreed on a place to meet and eat lunch together. Then we went separate ways. I did very little moving around. About all I did was look and listen. The squirrels played all around me. They would come up almost to me. I thought one fat fellow was going to run down a limb right into my lap.

About 10:30 that morning the sun came through the mist and it was one of the finest days I ever spent in the woods.

At noon I met Odell and we ate lunch and exchanged comments about the hunt. Neither of us had seen any deer yet. After lunch we separated and went back hunting.

The afternoon passed very fast. I was sitting down and leaning against a large pine tree. The sun was shining as it does in November when we have a mild day. It was kind of a dreamy afternoon. The kind on which you like to be in the woods. Suddenly I heard a noise in the laurel. I thought it was Odell coming around to chat a while, as he had done once or twice that day. I just wasn't on guard.

The sound was to my right and back of me. As I turned to see what it was my back scraped against the pine bark. It made a slight noise. Out walked the largest buck I ever saw. There he stood in all of his majesty, the king of the forest. An eight point buck he was. With head erect and looking straight at me. Well, he looked at me and I looked at him. And neither of us could move. I could see that safety on my Mauser rifle sticking straight up. I knew that if I moved that he would be gone in a flash into the laurel. There he stood not more than 40 feet away and I couldn't move. I guess I had a good case of buck fever. We looked at each other for the

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Raleigh

longest time before he wheeled and ran back into the laurel. I could hear him run and sounded like a mule running.

After seeing the large buck I hunted up Odell and told him about it. He said that he had seen a deer in the laurel but only his antlers and not well enough to get a shot. The day was far spent so we decided to go in.

I thought to myself that I would like to have another chance at that deer. Well, we had two more hunting days coming up. Anything can happen in two days. I was full of eagerness for the next day's hunt. I was hoping and praying for one more chance at that buck.

The next morning was foggy and misty again. I remember it as if it were today. Odell decided that he would go up the ridge. I was to go around and come in on the right side of the ridge. I crept along slow and quiet as I could. The air was heavy with mist. One could have made good time but I took it slow. I decided to stop some seventy-five feet from the stand I had the day before. From this stand I could cover the ridge above some hundred yards away, also the pine glade below.

The time was about ten of eight when I saw the buck come up the ridght running. He stopped and looked back. As he did I tried for a neck shot and missed. He wheeled around and ran back the way he had come some fifty feet. He stopped and tested the air. This time I took a bead on the shoulder and cut down. Later I found the bullet entered just under the heart.

After I fired off he went in a bound just as though nothing had hit him. Well, I thought, I've missed. The ground was wet and soft so tracking was no problem. I tracked some hundred feet before I found any blood signs. Then I found a drop now and then. As I went on I found more and more blood. I would find places where he would stop and stagger. Then I knew before long I would find the deer. At last I found him. There he lay stretched out against a bush. He wasn't dead yet but was too far spent to move. I stood and watched him for some time. I wanted to be sure he was dead before I got too close.

I called Odell, and he stuck the deer but he had already bled out from that 170 grain Mauser bullet hole through him.

Odell said, "Well, you're going to have that head mounted, aren't you?" I had never thought of it before. I'm mighty proud I did though. Eight point bucks don't always come as easy as this one did.

January 15 Is Deadline For Wildlife Week

Register Your Pupils Now — Use This Form

Win or Lose — You will enjoy participating in this New Type of Contest. Open to Students in 7th to 12th Grades. See Above for more details, and watch for future Issues of WILDLIFE.

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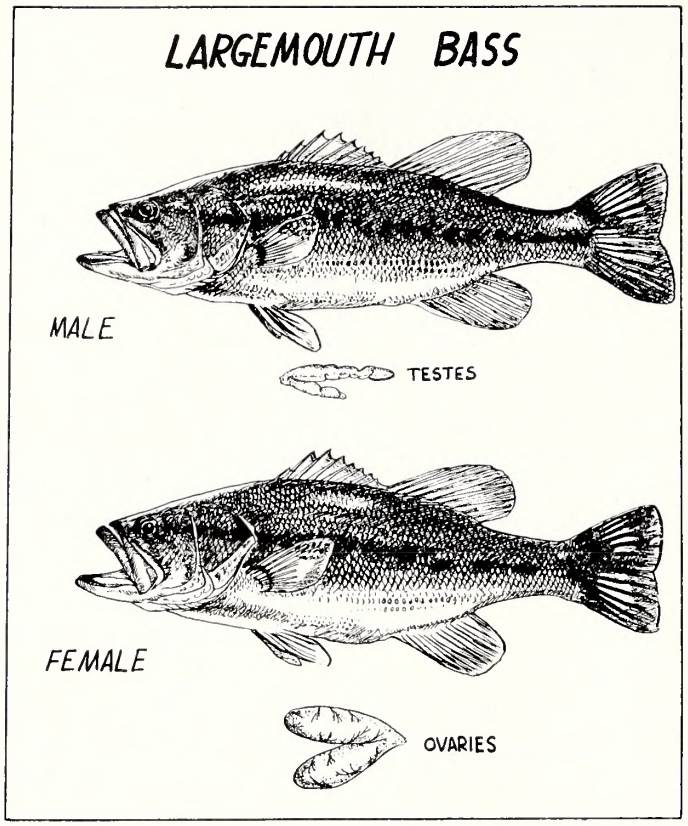


How Fish

by Harry Cornell

(Part I)

Among all of the vertebrate animals, the fundamental of reproduction is the same. An egg of the female is fertilized by a sperm from the male of the same species, and from the union of that sperm and egg a new individual of the species develops. It makes no difference whether the animal is a bass or a boa constrictor, a crow or a cow. The fundamental principle is still the same and only the details are different. Nature has arranged for the various groups of animals to use different methods in getting the sperm and the egg together, and the details of development of the individuals are different among the different groups. Even among the fishes, there are some differences in the details of reproduction.

Let's consider our friend, the largemouth bass, and see how he goes about the business of reproducing his kind. In the male bass are paired organs called testes which produce and store the milt. The milt is a white fluid containing thousands of individual sperms, each so small that it would have to be magnified in order to be seen. The comparable organs in the female are the ovaries. These contain several thousand yellowish eggs, each one being large enough to be easily identifiable.

As soon as the female has finished laying her eggs in the spring of the year, a new set of eggs for the following spring begins to develop. They grow rapidly during the summer, and by fall nearly have reached the size and development where they are ready to be laid. During the winter, when the water is cold, the bass eats very little and almost hibernates. At that time of the year the eggs do not develop but remain in a nearly ripe condition.

Some fishermen believe that bass spawn in both the spring and the fall. A reason for this is that during July and August they catch female bass with ovaries containing well-developed eggs. Actually, that is the time the eggs must develop in order to be ready for the spawning season the following spring. To visualize what these eggs look like, just think of the last time you had herring roe for breakfast. They were eggs from the ovary of a herring. When you eat caviar, you are eating the eggs of a sturgeon.

Now the bass never has read a book which told him that he was supposed to spawn in April down along the coast, or in late May or early June in the mountains. Even if he knew it, he couldn't read a calendar, anyway. Just like a great many other things the fish does, his spawning is controlled by water temperature. When the water warms up to 61 or 62 degrees in the spring, the male largemouth begins to look for a suitable place to build a nest. He may try several spots before he finds one that suits him, but at about that temperature he will prepare a nest ready for spawning. He will use his fins to fan out a circular depression in the bottom. This may be up to one or two feet in diameter. The nest may be on sand, silt, hard mud, or sometimes even dead leaves. But a bass cannot build a nest in soft, loose silt. This fact accounts for the lack of bass in many of our rivers and lakes.

After the male has built his nest, he defends that area as his own territory and drives away any other males which may try to come near. As the water continues to get warmer and reaches the 66 to 70 degree temperature, the eggs of the female have developed to the point where they are ready to be laid. When she swims by and sees the prepared nest with the male on guard, she will swim in beside him and make herself at home. For a few hours, or as much as a few days, the two fish swim around in the vicinity of the nest and appear to be getting acquainted. Their courtship consists of nudging each other with their noses and swimming back and forth across the nest.

As if by some prearranged signal, the two fish will settle down into the nest side by side. The female will extrude her eggs into the nest, and at the same moment the male will emit a cloud of milt which seems to cover them. The eggs are heavier than water and sink to the bottom. Their coating is adhesive, and they stick to whatever they happen to touch first. The sperms in the milt are equipped with whip-like tails by means of

Reproduce

Illustrations by Duane Raver

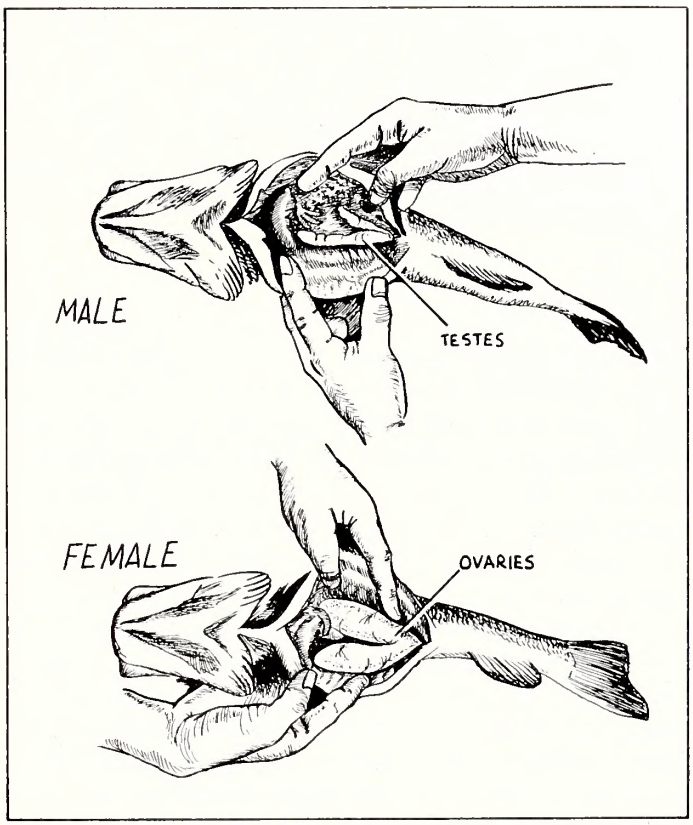
which they can move through the water and find the eggs. As each egg is united with a sperm, a new individual fish has been formed.

After the female has laid her eggs, and after they have been fertilized, she swims away and leaves the care of the young entirely to the male. For several days he stays over the nest, fanning the eggs with his fins so they will be continuously supplied with fresh water containing oxygen, and also to sweep away any silt which might accumulate on them and smother them. Then there are a great many enemies, including most other species of fish, which would like nothing better than to have a dinner of bass eggs. It keeps the male bass busy driving away other fish and keeping the eggs clean and aerated.

At this stage of their development, there are many hazards to which the eggs are exposed. A sudden drop in temperature of as little as 10 degrees can kill every egg in the nest. Of course, papa bass has no control of such a situation, and when the eggs are dead he simply swims away and leaves them. If there is a heavy rain storm which brings a lot of silt into the water and turns it yellow, the mud settles on the eggs so fast that even the best efforts of the male bass cannot keep them clean. A layer of silt over the eggs shuts off the oxygen supply and they suffocate.

Another serious hazard is the change in water levels which often happens in power reservoirs. The largemouth usually builds his nest in water from one to six feet deep, with an average of about three feet. Daylight seems to be necessary in order for the eggs to develop, and the bass usually builds his nest deeper in clear water than in turbid water. If the water level fails during the time the eggs are in the nest, the male bass usually will stay with them tenaciously, even to the point where his dorsal fin is out of water. But if the water continues to go down, he finally has no choice but to swim away and leave the eggs to be exposed to the air and to die.

The eggs hatch out in from five to eight or nine days, depending on the temperature of the water. If the water temperature happens to increase rapidly and become particularly high, the eggs may hatch in as little as three or four days. The length of time depends entirely on the temperature to which the eggs are exposed, but after several days the tiny bass break out of the eggs. At this stage they are called "sac fry" and are incapable of swimming. You can see a head and a tail, but the



Comparative size and location of black bass reproductive glands.

stomach is the "sac" which actually is the yolk of the egg from which they came. It is stored food material which they gradually absorb during the next week or ten days while they are in the nest. During that time they grow considerably, and when the yolk material is absorbed they must either begin feeding or starve to death. After the heavy yolk sac has been absorbed and they can swim away from the nest, they are ready to start looking for food and begin life as new individual largemouth bass. If everything has gone well and the spawning has been successful, there may be from two thousand to eight thousand young fish starting out from each nest. The largemouth fry, which they are now called, move away from the nest in a compact school in search of food, still guarded by the papa bass. He guards them closely for several days, but as they grow larger he leaves them more and more to their own devices until one day he goes away and does not bother to hunt them up again. After that if he ever happens to see one of them, they are just another little fish so far as he is concerned, and he will gobble up one of them just as quickly as any other fish he might find.

Now that we have seen how the largemouth bass gets its start in life, let's take a look at some of the other fish of the same family. We can see how the details of their reproduction compare with the largemouth. Many fishermen cannot tell the difference between a smallmouth and a largemouth bass. Since they are so similar, it is reasonable to expect that their spawning characteristics are also similar. The smallmouth always seems to prefer colder water, and he begins building his nest

•——————See FISH Page 21

SCHOOL PAGE

TEACHERS, *Please*

by Lunette Barber

"I am going to do a unit on birds in the spring." This statement is heard over again and often from teachers. And sure enough about the time the birds begin to expose themselves in sound, color, and motion, the unit gets under way. That is fine, but many times too much emphasis is placed on the aesthetic value of birds. While teaching a unit, it is very important to stress the economic value. So, Teachers, Please Do! Where may the information be found? Most any good encyclopedia and reference books will give a great deal of help.

There have been numerous requests to the Commission by teachers and students for pertinent information about birds of our state. Most of the information desired is: pictures of birds, identification material and how are birds protected. Too often in teaching bird study to children in school, which by the way is prevalent, emphasis is placed on the aesthetic value. The theme is: birds are nice to have around, birds are beautifully colored, birds sing sweetly. This value is important but becomes more so and effectively if in the course of study their economic value is stressed. One may shun the thought of dollar and cent values being taught in this study, but I can't help but feel that this would do more toward appreciation and protection of birds in our state by implanting in the fertile minds of school children a more descriptive value of birds to them.

The economic value of birds lies in the service they render in preventing the undue increase in insects, in devouring small rodents, in destroying seeds of plants harmful to agriculture, and in acting as scavengers. The true function of insectivorous birds is not so much to destroy this or that insect pest as it is to lessen the number of the insect tribe as a whole—to reduce to a lower level the great flood of insect life. But, remember they will never be instrumental in complete eradication of insect pests.

During the locust plague of 1873-76 in the Great Plains region, birds, though not in sufficient numbers to attack the widespread extent of the visitation, were very effective in cleaning up the many local areas where they appeared. It is said that the only fields in that region that were not ruined were those to which birds flocked. The English Sparrow, the common sparrow around towns of the state, is said to have saved a crop of asparagus from the asparagus beetle. Blackbirds have saved many orchards from canker worms. White grubs nearly ruined a cranberry bog but robins found the grubs a convenient source of food and soon saved the cranberry bog from destruction. Crows have gathered in flocks to make life rough on grasshoppers which plagued wheat fields.

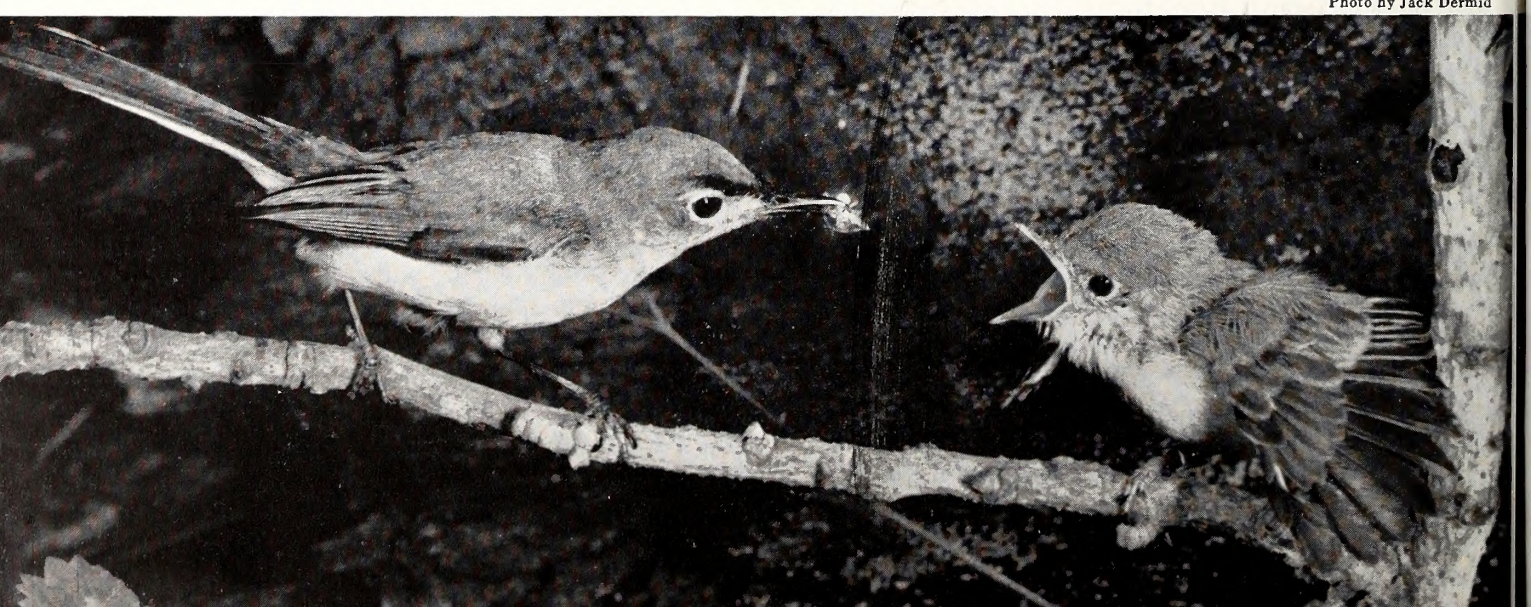
Just how much good birds do in keeping a natural check on insects is hard to say, but it is known some birds may destroy as many as 10,000 insects a day.

If we, an average human family of parents and two children, ate proportionately as much as birds do, our daily grocery bill would be like this:

50 loaves of bread	10 pounds of spinach
25 pounds of hamburger	6 heads of lettuce
30 doughnuts	1 gallon of ice cream

Many insignificant looking birds are really the farmer's best friend in his never ending struggle against pestiferous weeds. What school child has not seen sparrows, juncos and meadowlarks feeding on crabgrass, ragweed and pigweed seeds. Examination of

Birds consume enormous quantities of harmful insects. Here a blue-gray gnatcatcher offers an insect to its hungry youngster.
Photo by Jack Dermid



thousands of bird stomachs (sparrows and finches) shows that during the colder half of the year their food consists almost entirely of weed seeds. In the stomach analysis of three mourning doves a total of 23,000 weed seeds were counted.

Vultures, crows, gulls and the eagle comprise the group of scavenger birds. Have you not seen vultures and crows fly up from a highway or road where they had been feeding on the carcass of a dead rabbit or snake? Eagles and gulls feed on washed-up fish and other marine life left stranded by a fast ebbing tide.

Too many people still believe the best hawk is a dead hawk. Let's look at the record and then judge. Stomach analyses of 2,122 hawks revealed that 56% contained mice and other small mammals; 27% insects; only 3.5% contained poultry or game birds. Hawks and owls are definitely beneficial to the economic problem of the agriculture interests of our state.

There has been no attempt to present a dollar and cent value on the usefulness of birds to the people of the state. Only a few instances have been cited relative to the feeding habits of birds. If you set your own monetary value to what has been mentioned multiply this value by several hundred thousand (birds) and what is your answer?

Some birds of our state are classified as "game species," a prize sought by many sportsmen during open season of the fall and winter. Although few hunters seek birds as a staple food supply it is well to point out that the estimated weight of game birds killed during the 1949-50 hunting season was 500 tons or 1,000,000 pounds. Less than one-seventh of all the hunters killed quail which ranked third in preference to rabbit than squirrel. One-forty fourth of the hunters killed seventh-ranking ducks; and one-sixty first of the hunters killed eight-ranking geese. Proportionately few hunters sought marsh birds, woodcock, and wild turkey. The economic value of game birds to the state would be difficult to break down into individual kinds, but considering their popularity and availability to sportsmen these birds are in a business that requires about 16 millions of dollars in expenditure.

Yes, more life and interest in the study of birds can be realized if teachers give some thought and preparation to teaching the economic value of birds to the pupils of the classroom.

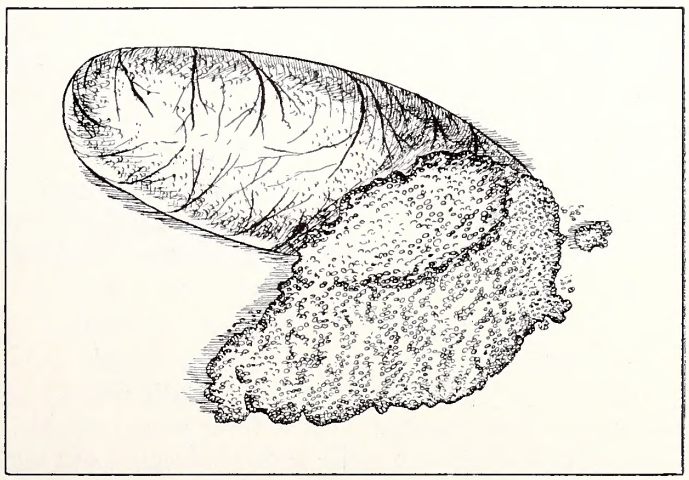
FISH

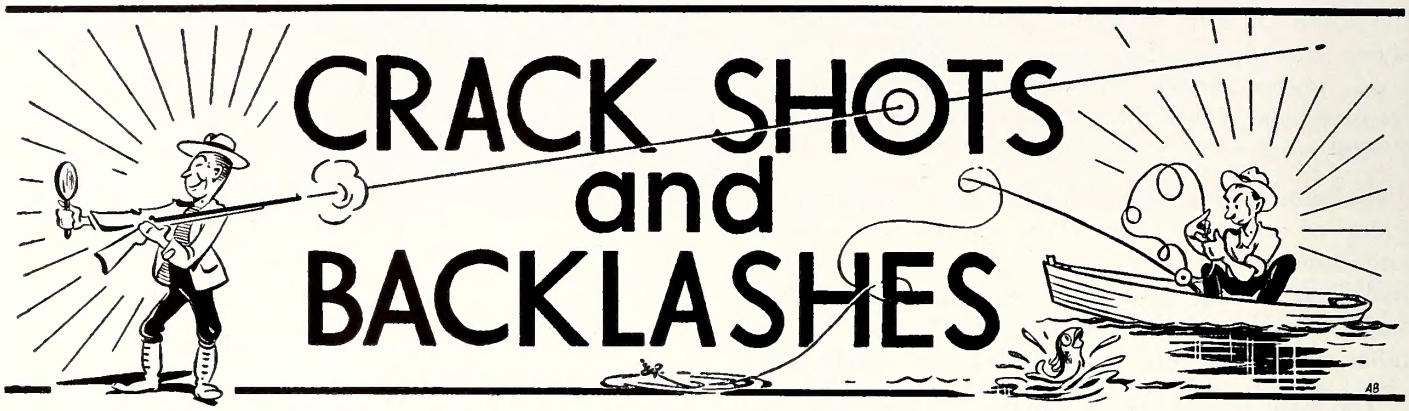
from page 19

at about 58 degrees. Both the nest building and egg laying are done at slightly colder water temperatures than the largemouth. The smallmouth is more selective in the choice of a spawning site. His preference is for a gravel or pebbly sand bottom, and he will not build his nest on mud or silt. Also, he seems to use more care in selecting a location for his nest where direct wave action cannot harm it or where it will not be exposed to direct river currents. The actual spawning procedure is very similar to that of the largemouth, and the sac fry settle down among the rocks and gravel in the nest after they hatch. When they have absorbed the yolk sac and are ready to swim, the greatest difference is noticeable between the fry of the smallmouth and largemouth. Whereas the largemouth fry were nearly transparent at that stage, the smallmouth fry are as black as a drop of ink. When they finally come up from the nest and start out in life for themselves, they do not travel in a school as the largemouth fry did, but scatter individually to all parts of the water. They seem to entirely lack the schooling instinct which guided the baby largemouth bass.

The spawning of the bluegill bream and other sunfishes is very similar to that of the largemouth bass. We would expect this because both the largemouth and smallmouth are members of the sunfish family, and actually are not bass at all. The bream spawn at even higher temperatures than the largemouth. Their nests are smaller and usually closer together. In a "bream bed" the nests are often found almost touching each other so that an exposed bed looks like a mammoth piece of honey comb. In spite of this, the individual male fish still maintains his own territory consisting of his own nest. They first spawn in the spring when the water temperature becomes warm enough to suit them; but unlike the largemouth and smallmouth, they frequently spawn again during the summer if they are in good physical condition and have plenty of food. Secondary spawning may occur at any time during the summer, and even well on into the fall. Since suitable temperatures have been reached, the secondary spawning depends on the physical condition of the individual fish and the speed with which an additional crop of eggs matures. This secondary spawning of the sunfishes provides so many in each year's crop that they very often become too numerous for the food supply. In small ponds, especially, they become half-starved and stunted. Poor fishing results.

Fish ovary cut open to show eggs.





DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Roland McClamroch of Chapel Hill, in addition to being a distinguished sportsman, is a past president of the N. C. Wildlife Federation and is currently a regional director of the National Wildlife Federation. Mr. McClamroch has done some serious thinking about the ever-present farmer-sportsman problem. His thoughts on this subject are the editorial for this month:

Is The Sportsman Culpable?

At a recent meeting of West Virginia Sportsmen Unlimited, held in conjunction with the West Virginia Game Commissioners and the Isaak Walton League of America, during a panel discussion on farmer-sportsmen relations the inevitable question of whether to post land or not to post came up for considerable comment. From statements made by hunters over many years, this observer assumes that the majority of hunters objects to and frequently resents the posting of land against hunting. Is this attitude justified, or does it represent an emotional reaction to which little thought has been given?

Many landowners testify, and mostly without rancor, that over the period of years depredations from hunters have been serious; livestock killed or maimed, fences broken down, crops trampled. Obviously, the landowner sought some remedy. Posting seemed the logical and less expensive course. That this was not completely successful was recognized. That it frequently put the landowner in an unfavorable position which he did not relish was recognized. With the introduction of posters announcing "Hunting Only by Written Permission" some of the disadvantages and stigma attached to prohibitive posting were realized. It was most encouraging to future farmer-sportsmen relations to find more and more landowners adopting the permissive formula.

Now what about the hunter himself, either individually or as a member of a group, with respect to posting? It is my contention that he is most culpable. That in spite of his somewhat general objections to the posting of land by others, his usual first move upon acquiring a lease for hunting privileges is to post the area extensively. Again, who has not driven through this state, or one of the adjacent states, and observed for mile after mile NO HUNTING PERSIMMON MOUNTAIN GUN CLUB or RIVERVIEW ROD AND GUN CLUB, usually with the attached announcement of a reward for evidence of violations?

It is safe to say that if the methods brought out in the preceding paragraph were adopted by the ordinary landowner, the condemnation of the hunting fraternity would be just about unanimous. Mr. Sportsman, it's time to realize that this whole business of landowner (or lessee)—hunter relationship is not a one-sided affair. It's time for all decent people to work together with respect for each other, with simple courtesy, consideration, and frankness. In this way the lawless ten percent will come nearer to being frozen out and possibly apprehended.

Although we are in the dead of winter, it won't be long before bluebirds will be looking for homes to rear their young. This suggestion by H. G. George of West End might easily save the lives of thousands of bluebirds:

"Dear Sir:

I wish to send in a suggestion that will prolong the life of our bluebird population.

"I do it every hunting season. She's never been hit yet."
Courtesy *Outdoor Life* Magazine

This incident happened on our farm this spring and I believe that it is worth passing on to others, so that they may help to keep our feathered friends alive. This spring while cleaning out our oil burners in our tobacco barns, twenty bluebirds had perished, because there was no outlet inside the barn and they could not find their way back up the pipe to the outside. Our pipes have the little hoods on top, which would make an ideal place for a nest, if there was a way to prevent the birds from going down into the burners. I know this will be of interest to your readers and I'm sure they will want to keep our bluebirds singing."

H. G. George
West End, N. C.

Mr. George sent along an idea or two for preventing bluebird mortality. Leaving the doors on the burners open would allow the birds to escape. Closing the top of the chimney with wire screen would prevent them from entering the burners.

Muskrats are constant menace to farm ponds. Here H. D. Joyce, Leaksville, poses the problem, and Harry Cornell of the Commission's fish division offers a solution:

"Gentlemen:

I have a problem which I hope you can help me solve. I have a fish pond of approximately six acres and I find that muskrats are damaging my dam and I would like to get rid of them if possible as there is a good deal of mica in the soil and washes very bad. Any help you might give me will be appreciated.

H. D. Joyce"

Mr. H. D. Joyce
Leaksville, North Carolina

Dear Mr. Joyce:

This is in reply to your inquiry concerning the prevention of damage by muskrats to the dam of your fish pond. This is a serious problem in many farm pond dams because the successful elimination of the muskrat population is usually followed by a new muskrat population from adjoining waters.

An intensive trapping program during the winter will help to hold the population in check. Damage to the dam can best be prevented by using 6 foot chicken wire of sufficient length to reach all the way across the dam. It should be staked down so that two feet of wire extend above the water level and four feet below it. The muskrats may dig burrows in other parts of the bank, but they will not succeed in continuing the damage to the dam.

Very truly yours,

J. H. Cornell
Chief, Fish Division

Harry Cornell gets another chance to supply information, this time on how to make bait for carp.

"Dear Sir:

I am a reader of your magazine and like it very much. I would like to have a formula to make carp bait.

Yours very truly,

D. S. Price
Charlotte, N. C."

Dear Mr. Price:

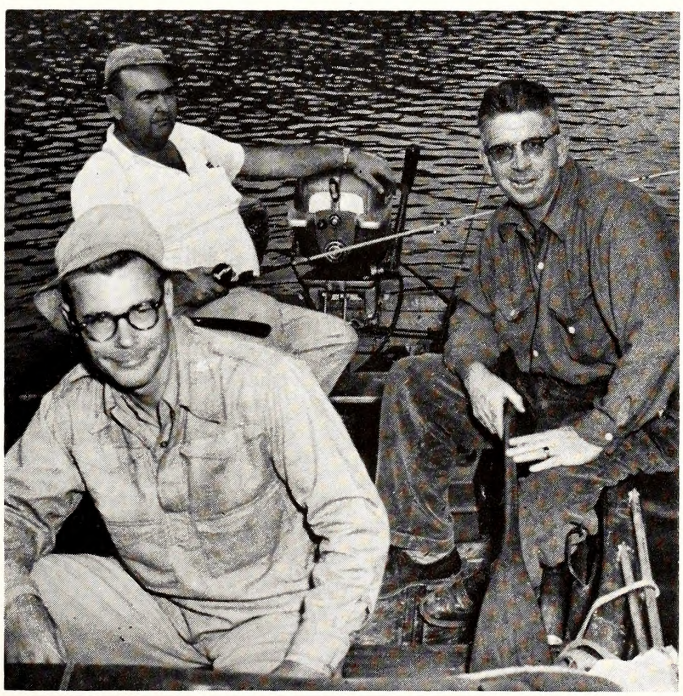
Each fisherman seems to have his favorite formula for making dough balls for carp bait. A standard one is as follows:

Sweeten 1¼ cups of water with sugar, corn syrup, or molasses. Bring to a boil and stir in 1 cup of cornmeal, being careful that it does not scorch. After it cools, knead until it becomes soft and doughy. At this stage a little flour may be added to make it more sticky, if necessary.

Some fishermen prefer to knead in a few fibers of absorbent cotton to help hold the individual dough balls together. Otherwise the current will wash them off the hook in a short time.

A bait that is less used but very efficient consists of a grain or two of corn on a small hook in the spring when the corn is in the milk stage. Dried corn grains are also suitable if they are first steamed to make them soft. We hope that one or both of these baits will make your carp fishing a success.

Distinguished Visitor to N. C.



(Photo Courtesy Asheville Citizen-Times)

Ed Zern (foreground) famous for his humorous books and advertising copy on outdoor sports, took time out for some fishing after attending the State Wildlife Federation Meeting in Greensboro, and to attend several wildlife club meetings in Buncombe and Mecklenburg counties. At left, background is Claude Jarret, Past President of the Buncombe County Wildlife Club, and at right is Fred Gray, President of the Buncombe Club and Western Vice-President of the State Federation. Both men are from Asheville.

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Wildlife
IN NORTH CAROLINA

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Photo by Jack Dermid

Weather Prophet?

Whether or not the woodchuck is a weather profit, he makes a fine target for rifle marksmen in the North Carolina mountains. The woodchuck or gronnd hog is the cottontail rabbit's best friend. Abandoned dens are fine rabbit lairs.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

WILLIAM B. UMSTEAD
Governor

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'Possum in de tree top, houn' dog on de groun'; 'possum mighty skeered o' de houn' dog's mournful soun'. **The opossum is the only North American marsupial.**

☆ ☆ ☆

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Jack Dermid ..... *Managing Editor*
Anne Taylor ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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FACTS AND FABLES ABOUT

THE GROUND HOG

by Edward Ray Smith, Jr.
District Biologist

Sketches by Will Hon

The ground hog, while found only in the mountainous western counties, is familiar to all. His chief claim to frame lies in his alleged ability as a weather prophet. In fact, February 2 is set aside as the day for his prediction. The old fable requires the ground hog to emerge from his burrow on this day, and if he sees his shadow, we are in for six more weeks of winter. However, if the day is cloudy and he does not see his shadow, winter is over. This yarn had its origin in Europe, and the European hedgehog did the job over there. When the colonists came to this country, they put the burden of weather prediction on the ground hog's shoulders, since the hedgehogs they knew were not present here. (1)

Then, too, the ground hog or woodchuck, as he is also known (they are really one and the same animal), has placed a problem before the nation that has kept us all puzzled for years. This problem is "How much wood could a woodchuck chuck if a woodchuck could chuck wood?" If you have the time, patience, and know a woodchuck or two, perhaps you can solve this riddle and become famous.

The ground hog, woodchuck, chuck, pasture pig, pasture poodle, whistle pig or *Siffleur,* as the French Canadians call him, are the same animal. The scientists have still a different title for this creature. They call him *Marmota monax monax*. But with all these titles, he is best known as the ground hog. Even though he is referred to as a pig, he really belongs to the squirrel family.

A description of this interesting creature will be included for those not too familiar with him. The ground hog is a heavy bodied, short legged, squirrel-like animal with short rounded ears and a brief, well furred tail. His color ranges from a grizzled black to a rusty brown, and albinos are sometimes found. He weighs from eight to twelve pounds, and measures from eighteen to twenty-four inches long. (2) The woodchuck's whistle is familiar to anyone who lives in his domain, and because of this call, the nickname of "whistle pig" was conferred upon him. The whistle is usually used as a warning signal, but he sometimes gives forth with this call for the pure joy of making noise. He can also make a chattering sound by grinding his teeth together, and sometimes, although rarely heard, he will sing with trills and flutes, much like the song of a warbler. (3) Most people think of the chuck as an animal of the fields, but he will swim if the occasion demands, and will climb trees if he takes a notion.

At a distance of several hundreds of yards, the woodchuck is an excellent target for a small caliber high powered rifle.

This animal is a resident of open meadows and fields, but occasionally is found in the deep woods. When colonists first settled in this country, the woodchuck was only found in the forest, and was rather scarce at that. However, with the clearing of the timber and more open ground being abundant, the woodchuck became very numerous. Man not only cleared the land according to the ground hog's taste, but he also killed most of the natural enemies that kept his number down. With all this new habitat and most of his natural enemies removed, Mr. Ground Hog and his tribe grew to immense numbers. Because of his taste for man's crops, and his annoying habit of digging holes and making mounds in pastures, he wass classified as a vermin to be hunted all year long. The chuck is restricted to the mountains of the western counties in this state, but he has a very wide range that covers the eastern United States, with the exception of Florida. (2)

The burrowing habit of the "pasture poodle" is a characteristic that has caused many a farmer to forget his Christian upbringing and turn the air purple with his cussing. His mounds, which serve as a lookout point and lounging chair at his front door, dull and damage the blades of the farmer's mower. His escape tunnels, without telltale mounds, often cause horses and cattle

to break a leg when they fall into them. These burrows are wonderful pieces of engineering skill. They will descend from two to four feet, curve to the right or left, then ascend over a low mound, and finally continue on for forty or fifty feet, depending upon the animal constructing them and the condition of the soil. The curve and upswing of the tunnel is made to hinder the entrance of larger animals, such as the fox, which has difficulty negotiating these curves. The main tunnel usually ends in the nesting chamber, which is dug a foot or so above the level of the main tunnel to prevent flooding during severe rains. Numerous side tunnels branch off the main tunnels, and these go to blind chambers or escape tunnels. Zoologists believe many of these blind chambers serve as lavatories which are used in inclement weather. The escape tunnels are always dug from within, hence no mounds, and practically making them invisible. The entrance, with its telltale mound, is frequently found between the roots of trees or under a rock. Many are dug out in the middle of pastures or fields. Those found in the woods or along the edge of the meadows are the burrows used for hibernation.

The woodchuck den is an elaborate engineering project, with an escape hatch, a living room, and a front door tunnel.

Hibernation of the ground hog starts in the late fall and continues until the middle of spring. The period of hibernation is prepared for by eating large quantities of vegetable matter, which the woodchuck turns into a thick layer of fat. It is this layer of fat that feeds the chuck through the long, cold winter. When preparing for winter, the ground hog will eat clover, grasses, alfalfa, plantains, green corn, and, to the annoyance of the gardner, most of the vegetables he grows. A hungry chuck will clean out a garden in a few days if unmolested. During hibernation, the ground hog is just a hair's breath from death. His heart beat falls to seven beats per minute, his body temperature drops to the low forties, and his breathing almost stops. Curled up in a compact ball, the woodchuck spends his winter in a deep sleep without a worry in the world. (4)

His emergence from hibernation seems to be governed by the temperature, but he usually sleeps from twenty to twenty-four weeks. After waking, the ground hog goes out in search of a mate, and after mating, returns to his den for another little snooze. On leaving his burrow, his figure is much more trim than it was in the fall, for during his long sleep, he loses from one-third to one-half his autumn weight. The young are born in four weeks, and are pink and naked at birth. There are two to six in a litter (2). These young do not leave the burrow until they are one or two pounds in weight, and that is usually around the middle of the summer.

The woodchuck is a peaceful fellow, seldom bothering his neighbors. Frequently, several families will inhabit the same small meadow, and two animals will often share the same burrow. The only time he becomes aggressive is when a strange ground hog or another animal, such as a skunk, opossum, or rabbit, tries to enter his den. However, when Mr. Ground Hog is taking his winter nap, opossums, rabbits, and skunks will use his tunnels for protection from cold and enemies. The "rabbit holes," which most people believe are dug by rabbits, are in reality abandoned woodchuck holes. These holes are very important to rabbits in cold winters, because without them they might freeze to death.

The ground hog has relatively few predators, man being the worst of these. Hawks, owls, foxes, and dogs are the only others.

The woodchuck, while not a game animal, is hunted extensively in areas where he is abundant. Many people hunt him with dogs, shotguns, or twenty-two rifles, but the newest method is shooting the chuck with high speed, small bore rifles. Here, such rifles as the .22 Hornet, .218 Bee, .219 Zipper, .222 Remington, .257 Roberts, .220 Swift, and others, come into their own. With muzzle velocities ranging from 2700 to 4100 feet per second, these rifles hurl a light projectile, with re-

•——————See GROUND HOG Page 16

Fish and Wildlife Service Photos

Strictly vegetarians, ground hogs are considered a delicacy by many people.

Photo by Jack Dermid

There are fish to be had for the winter angler hardy enough to withstand chilly weather.

WINTER FISHING

by Duane Raver

Fisheries Biologist

If you think fish can be temperamental during late spring and summer, just try them in mid-winter. One day they may be everywhere you cast—the next day, nothing. The weather, barometer, moon and even the almanac can be exactly the same; yet the fish react completely differently. Why? Frankly, I don't know. Theories are plentiful, but the total story is simply not known. However, don't let any such pessimistic talk keep you from hitting the lakes and ponds in January, February and early March. You'll be in for some surprises to say the least.

The warmer days seem best, both from the standpoint of comfort and fishing success. Its best to dress for hunting rather than fishing and be prepared for sudden cold winds. Time of day will vary, but from 10:00 a.m. to 4:00 p.m. will find some winter species on the move.

Now here is where one deviates from the summer fishing to which you are accustomed. Certain species of fish practically hibernate when the water temperature dips below 47°F and hence bite very little. The fish you should concentrate on are crappies, pickerel, white perch, yellow perch, and sometimes bluegills. Bass? An occasional big one will swallow a minnow fished deep or hit a slow moving plug during the cold months. And if the weather happens to be warm for several days, the bass will become active and you may do quite well with them. Your best bet, though, is the crappie.

A fairly heavy fly rod, standard spinning rod, or a cane pole will do for crappie fishing. Since you will be dunking bait most of the time—and this at from 8 to 15 feet—a fly line is a hindrance rather than a help. Monofilament line of about 6 pound test is ideal. This means that on the fly rod, any reel that will hold this line will be satisfactory.

Bait hooks of light but strong wire work best since they allow the minnow or other bait plenty of freedom. For crappies, yellow and white perch, a number six or eight hook does nicely. Be sure the point is sharp. Check it occasionally and touch it up with a small sharpening stone or a file. Have a good supply of hooks since the brushy areas you will be fishing really hang up tackle.

One split shot is plenty for a sinker. This should be placed about 18 inches above the hook. If one shot doesn't take the bait down where you want it, try two; never use a heavy "sinker-type" weight. Most winter species will be very light biters and a delicate touch is necessary to hook the bait stealers. A heavy weight makes it difficult to detect strikes. If you are using a standard casting rod and reel, you may find that a ¼ ounce sinker will be necessary for casting the bait short distances.

The matter of using a cork or other type of bobber is up to your personal preference. Most of the time one will be of little benefit although many anglers like to see the bobbing of a brightly colored cork. Since much of the winter angling will be done at depths of 6 to 20 feet, a cork will be a disadvantage.

The type of still fishing outlined calls for a boat or pier situation. Fishing from a sloping bank seldom produces as does the deep water angling. Much care still must be taken to minimize noise or water disturbance; so take it easy on your approach of the fishing area. Usually if the fishing is done quietly, several fish can be caught from the same small area.

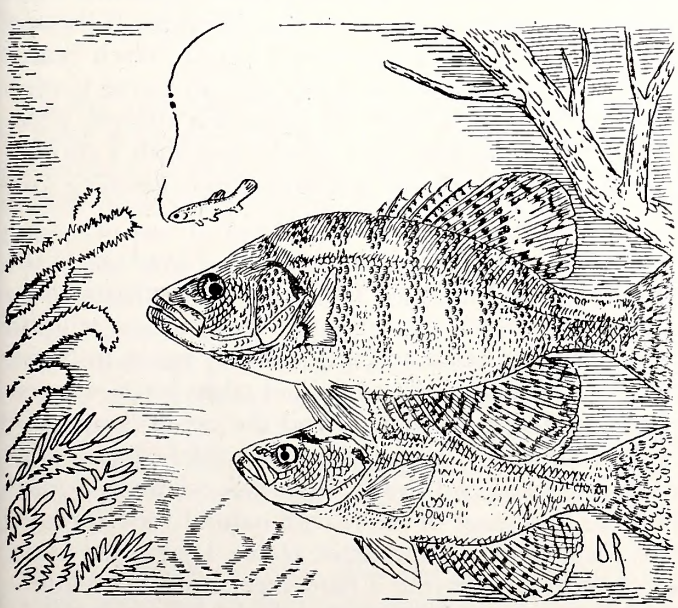
As for baits, two of the best for crappie and yellow perch are the golden shiner minnow and the top water mosquito fish. The bait fish should be fairly small—

seldom over 2½ inches long. The livlier the bait, the better the catch. Hook the minnow lightly through both lips or just back of the dorsal fin. Be sure that the bait is hooked *lightly* for long life and good action. Bass like shiners from 2 inches to 4 or even 5 inches. Hooking is best done through the lips since bass ordinarily attack their food from the front. Try freshwater shrimp and earthworms too; both will surprise you at times by taking bass and pan fish. Obtaining bait in the winter may be quite a problem and you may find that it is wise to keep a supply of earthworms in a box or bucket of soil in the basement.

Artificial lures usually do not pay off in winter angling for one of several reasons: first, the fly or plug is not fished at the correct depth to find the fish; second, the lure probably is retrieved too rapidly; third, the artificial may be entirely different from the natural food of the fish being tried for. This does not mean that your plugs, flies, or spinners are useless during the cold months. They may be very effective if fished slowly at varying depths. Generally the smaller lures are best, with the wobbling, spinning baits good. If the day is particularly warm and the surface water has warmed somewhat, surface plugs may take big bass nicely. Or if you see a winter hatch of insects, try dry flies and popping bugs.

One way of locating fish, particularly bluegills, when the weather is cool is to drift or troll very slowly with a tiny spinner and earthworm or frozen shrimp. This lure should be fished near the bottom for best results. The secret seems to be slow movement over a wide area until the fish are located.

Winter fishing is different from summer angling, so change your technics until you solve the riddle. There's no use in storing the tackle if you really like to fish. Keep trying and you will soon discover the fascination of winter fishing.



Sketch by Duane Raver

Fish deep, use live bait for best winter catches.

No One But You

Backyard Conservation by Bill Hamnett

This year of 1954 is really going to be a year dedicated to Conservation of Natural Resources. National organizations are emphasizing the need for more concerted understanding of this important problem and program. Your Wildlife Resources Commission is lending assistance and guidance to organizations in the state which have indicated a desire and willingness to participate in this important endeavor. Some of the organizations in North Carolina participating are the 4-H Clubs, F. F. A. Chapters, Boy Scouts, Girl Scouts, and Wildlife Clubs.

The members of 4-H Clubs and F. F. A. Chapters are participating in wildlife conservation projects which will restore or improve wildlife habitat throughout the state. Many of the members for the first time will be given the opportunity to see first hand the local value of conservation practices to them and their community, and put in to practice corrective measures. Those members of 4-H Clubs who do outstanding work in wildlife conservation will be awarded a free week at Camp Millstone for the annual 4-H Wildlife Conservation Camp.

The Boy Scouts, in cooperation with the national theme "Conservation Good Turn in 1954," will study and put into more active meaning the many phases of scouting associated with our natural resources. To stimulate greater participation, the Commission is providing the services of its biologists to assist in improving the wildlife habitat at the several Council Camps through planting demonstrations. An award is to be given to each scout who receives the three merit badges in the conservation group—soil and water conservation, forestry, and wildlife management. The Council having the greatest number of scouts qualifying will be given an award of merit.

The wildlife clubs of our state will have a great opportunity to conduct active participation programs with youth groups. Through their organization and leadership, encouragement and assistance to the youth group activities would become a stimulating part of their program planning for the year. Wildlife clubs can provide field days, contests and joint-meetings with the youth to point out that the primary interest of their organization is conservation for today and tomorrow as well.

This year North Carolina is planning to send one of its outstanding youths in conservation as a participant in the nationwide conference of selected "Young Outdoor Americans" in Chicago in March.

Yes, this is a year of emphasis on conservation. WHAT CAN *YOU* DO? WHAT ARE *YOU* DOING? WHAT WILL *YOU* DO?

The Author

LEADERS IN CONSERVATION

by Col. Frank L. Page

This is the first in a series of articles on the men who were instrumental in creating a situation which has made possible the present progressive wildlife conservation program in North Carolina. The editors interviewed this month's leader, and asked him to jot down his reminiscenses and philosophies so that an article about him and his activities could be prepared. Colonel Frank L. Page of Tryon did such a wonderful job that we are running his story just as he wrote it. Col. Page was the first president of the N. C. Wildlife Federation.

Being the son of a Methodist Minister, my elementary education was scattered all over the state in such schools as were available during those years prior to a Public Educational System. At the age of sixteen I attended Oak Ridge Military Academy but for financial reasons I did not continue. I started to earn my own living at the age of seventeen. Fortunately, since formal education was interrupted at such a young age, I was born with an inquisitive mind and a keen interest in things, people and animals, past and present, so I have continued to learn a "good way of life" and have few educational regrets.

My military career has not been as extensive as most of my acquaintances believe. I was a Private in the N. C. National Guard from 1889 to 1892, then Lieutenant and Captain from 1912 to 1916 in the N. C. Coast Artillery Corps. Later I was "promoted" to Colonel by the late Hon. Hill Hunter and former State Senator Benjamin Cone and others for merits inappropriate for this paragraph but admittedly more relative to "Wild Life" than the Military!

As some are born with a "silver spoon in their mouth" I must have been born with a rabbit foot in my hand! My childhood was spent in the country and my interest in making and setting my rabbit traps started long before I was old enough to be unafraid to check on the night's catch alone in the early dawn. I usually dragged my baby sister along for companionship and moral support! To me at that time no chicken or turkey could rival my rabbit catches for meat at the table. Up to the time I was sixteen years old I was most interested in and developed association with men who were hunters of rabbit, squirrel, opossum, coon and fox. From these men I learned at an early age the habits and habitats of each, as well as a genuine love for wildlife. In summers I knew every good fishing hole in the streams and ponds which were not too far from my home. At thirteen I had my first fox hunt with a cousin in the Sand Hills near Hoffman, N. C. After an hour's run, in which time I covered on foot almost as much territory as the hounds and the fox, I was in at the kill and a convert. From that date fox hunting on a good horse with a pack of hounds has been a most interesting and absorbing avocation to me.

Because of a change in my business, I lived out of the state from 1917 to 1929. Tho' I lived in a metropolitan area and had little opportunity to exercise my wildlife activities, the interest remained. On my return to North Carolina I found a revolution had taken place in everything pertaining to wildlife and the out-of-doors. The heretofore wild countryside was narrowed by a network of paved roads and broad highways; where there had been large acreage of fields with natural food for wild life, there were now industrial plants, landscaped areas, etc. Nature was having a hard time supplying wildlife food and cover and where there had been a handful of hunters in certain sections there were now hundreds.

Man had more leisure from his business and was no longer limited to streams and fields near his home—the automobile, fine roads and a 40 hour week had changed all that. The man in the city in a few minutes or a few hours could slip into the country man's role. This role was also becoming faddish, so pseudo interest was developing. Such rapid changes usually bring about disastrous results. Now nouveau sportsmen, armed with new lures and the fast becoming popular automatic shotgun, greedy by their own nature and ignorant in nature's laws of wildlife, were taking such a toll of fish, fowl and animal that certain species were becoming almost extinct and others were each year losing in their battle for survival. The Old Timers recognizing this were making an effort to protect and supply food but it was not enough to offset the damage done by the indifferent. The drastic need to protect and propagate wildlife in order to save it was a challenge to me and to all lovers of wildlife. When the first game laws were passed in North Carolina, they were administered by the Board of Conservation and Development, a board of honorable and successful business men who conducted the affairs of many projects of the state, leaving only very limited time and attention for this great undertaking of wildlife restoration and protection and with few exceptions, practically no specialized talent of biologists or men of training in this field were employed.

Many other states were operating under new laws to successfully cover the new conditions that were rapidly and drastically depleting the supply of inland fish and wildlife, by the employment of experts on a full time basis with no other duties. Early in January 1945 there was a meeting of some forty or more citizens from all parts of the state in Raleigh when the North Carolina Wildlife Federation, Inc., was organized, with a new bill to present to the Legislature—a bill which the Federation thought embodied the best points of several states who were then operating successfully under a Wildlife Commission separate and apart from any other duties.

By this time, however, the Legislature was rushing to close with all work that could possibly be accomplished and although we had many friends of our plan in both houses, we decided it would be a mistake to attempt to put the bill before that session. We then occupied our time and energy in building up our Wildlife Federation, the expense of which was born entirely by its members in contributions of membership dues, both annual and life, and the contribution of time and expense of its officers, until the meeting of the next Legislature in 1947 which passed our bill known as the Separation Bill, almost unanimously by the House and Senate, not over a half dozen or so of both houses against it.

In my opinion, no state now has a better corps of trained personnel in the management of its inland fish and wildlife resources service. Although this statement may be generally admitted by Wildlife Enthusiasts and sportsmen of the state, it is assumed that no informed member of this fraternity expects or hopes ever to see wildlife in such profusion as existed within the memory of the writer and other old-timers now living.

Under present conditions enthusiastic cooperation will be required of all sportsmen and wildlife friends in conjunction with the present or future boards of scientific and trained management, to keep our streams and forests stocked with even a fair percentage of the supply within the memory of the older citizens and sportsmen of the state.

FINAL QUESTIONS

WILDLIFE QUIZ CONTEST

Teachers must submit completed Quiz forms to N. C. Wildlife Federation, Box 1341, Raleigh, by March 15, 1954.

1. About 3%_____, 5%_____, 10%_____, of all forest fires are caused by lightning. (check one)

2. The deer_____, gray squirrel_____, cottontail rabbit_____, is the most popular wild mammal with North Carolina school children. (check one)

3. Fish absorb most of their oxygen through lungs_____, gills_____, skin_____. (check one)

4. Which of the following are migratory game birds: bobwhite quail_____, wood duck_____, ruffed grouse_____, mourning dove_____. (check each one)

5. The hummingbird_____, bald eagle_____, arctic tern_____, barn swallow_____, travels the greatest migration route of all birds. (check one)

6. Ruffed grouse are native to the coastal plain_____, piedmont_____, or mountain_____ region of North Carolina. (check one)

7. In 1953, October 1_____, November 26_____, December 1_____, was designated as Wildlife Protection Day. (check one)

8. About 60%_____, 75%_____, 95%_____ of our game is produced on agricultural lands. (check one)

9. The daily creel limit on black bass in North Carolina is 6_____, 8_____, 10_____. (check one)

10. Write an essay of 500 words or less on this topic: WHAT I CAN DO TO CONSERVE THE SOILS, FORESTS, WATERS AND WILDLIFE IN MY COMMUNITY.

4-H CLUB BOY GOES TRAPPING

by Joe Lee Smith

Trapping fur bearing animals did not mean a thing to me until the summer of 1951 when I attended the 4-H Club Wildlife Conference at Camp Millstone. Ken Wilson, biologist and trapper with the Wildlife Resources Commission, talked about trapping. He told us about the value of the fur resources and took our class on a field trip. Sets were made demonstrating the best spots to place traps for muskrats and mink. He showed us how to avoid catching dogs in traps. The stories Mr. Wilson told stirred my interest and I decided I was going to trap.

Muskrat trapping in shallow water requires a good supply of Stop Loss or Two Trigger steel traps. These traps make it difficult for the muskrat to escape by twisting off its foot. The best traps for mink are number 1½ though number 2 sizes are used by some trappers. I started out with a dozen traps, stained them by boiling in water with oak bark and black walnut hulls and then dipped them in shellac. My traps were now protected against rusting and ready to set.

Mr. Wilson arrived at my home about mid-November just before the trapping season. It was a cool crisp sunshiny day as we headed for the small creek below my house. I had never seen a mink track in my life. Would we find their tracks? How about muskrats? What other fur animals would be present? These and many other thoughts ran through my mind as we approached our objective. I'll never forget that interesting day in the field and the dreams I had that followed. We found several sets of mink tracks, plenty of muskrat signs and one raccoon track. Not a lot of fur but a fair supply to get started on. Before my friend left that night he gave me the following advice: (1) Get the landowner's permission before setting traps. (2) Trap during legal season only. (3) Buy a trapping license. (4) Tend traps once every day. (5) Don't steal your competitor's fur or traps.

The first year experienced trappers from Statesville moved the cream of the fur crop almost before I got started. That season I caught only four muskrats and a raccoon. Catching raccoons in my part of the state is not lawful so you can imagine how I felt when I found one growling at me in a trap. What should I do? What if the game warden should come! How could I get it out of the trap and not get bitten? These and many other thoughts jangled through my head. No, I wasn't scared! But suddenly coming face to face with a big fluffy appearing growling coon created a lot of brand new problems. Finally, after quite a struggle, Mr. Coon was corraled in a box at home. My plans were to fatten the critter and then let it go. I fed him corn, fruit, bread and tidbits from the table. He sure liked what I fed him. But he liked freedom better. One morning I found a small opening in the box. My raccoon had escaped. Thus ended my first year's experience at trapping. What exciting fun! Oh yes, I almost forgot to mention that the four muskrats brought me $7.40.

If Mr. Wilson thought I made a poor showing, he never let on. In fact, he praised me. Guess why? Not for what I caught—he said I'd catch more as I learned more—but because I tended my traps every day, except when high water made it impossible, from November 15 thru January 31. He said thousands of dollars in fur are lost every year because trappers don't tend their traps.

Dreams of the trapline remained with me through the summer. When October came around I started visiting the streams near my home. In one locality tracks and other signs of muskrats were found, and at another spot under a bank I recognized mink tracks. Boy, what a thrill! Maybe two mink or even three mink were traveling the stream. Would I catch one? How much money would I get? Would the professional trappers from Statesville catch all the fur while I was in school? These and many other thoughts kept my mind occupied.

Long before November 15 I had my traps ready and my sets picked. On the opening day, I got up early and started in high spirits for the creek with my license and my traps. Blind sets, bait sets and spring hole sets were made for mink. For the muskrats, I made sets at the bottom of slides and at a couple of fresh diggings. The next morning produced three muskrats, but no mink. Then November 20 rolled around. Our junior class was giving a play the night of November 20 and with late rehearsals and all I decided not to tend my traps. But after school I changed my mind and went anyway. The first five traps did not contain a thing but the sixth set held a prize—a big buck mink! It was still alive and nearly out of the trap. After that experience I tended my traps every morning. A few weeks later I caught another mink—a small female. By mid-December most of the fur in my locality was trapped so to save breeding stock for next year, I pulled my traps. My share amounted to 9 muskrats and 2 mink.

Mr. Wilson advised not to send my fur out-of-state, so I shipped what I had to Mr. Frank Pearson, a fur dealer in North Wilkesboro. The mink brought $25; $14 for the male and $11 for the female. Five adult muskrats brought $1.50 each and 4 kits $.25 each for a total of $8.50. The $33.50 received for my furs doesn't begin to represent the dollar value in enjoyment I had hiking, dreaming, hoping, and in expectant fun. Next year I'll be out there trapping again and who knows, some day I may earn enough money to help me through college!

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Wildlife Commission Reelects Officers

At its January meeting in Raleigh the Wildlife Resources Commission reelected R. Floyd Crouse, Sparta, Chairman; H. C. Kennett, Durham, Vice-Chairman, and E. G. McGougan, Lumber Bridge, Secretary, for the calendar year 1954.

* * * *

Commission to Expand Nursery Operations

The U. S. Soil Conservation Service has turned over its nursery facilities and equipment near Gretna, Virginia to the Wildlife Resources Commission. The Commission will operate the Gretna nursery until a lease with private owners expires in June, and negotiations are under way to obtain an abandoned SCS nursery near Chapel Hill. Seed cleaning and processing, irrigation, and power equipment will be transferred to the Chapel Hill site. Acquisition of a new nursery site and the additional equipment will enable an expansion of the Commission's production of lespedeza and multiflora rose for free distribution to farmers throughout the state for farm game habitat improvement and soil erosion control. In the past the Commission has been getting most of its planting stock from the Virginia nursery.

* * * *

Trout Stocking Schedule Okayed by Commission

The Wildlife Commission has okayed a plan to stock nearly 60,000 brook, brown, and rainbow trout in more than 500 miles of designated mountain trout streams. The initial stocking will be completed before the opening of the trout season on April 5, and will be followed by supplemental distribution of an additional 80,000 trout as the season progresses. These are yearling trout of creel size.

* * * *

To Purchase New Patrol Plane

The Wildlife Commission will purchase a light plane to replace the plane which crashed near Thomasville early in January when Pilot Patrolman E. J. Sullivan and Granville County Protector Norman Rosebrock were seriously injured. The plane crashed when a sudden gust of wind tipped a wing into a tree as the men investigated a suspected game law violation on the ground.

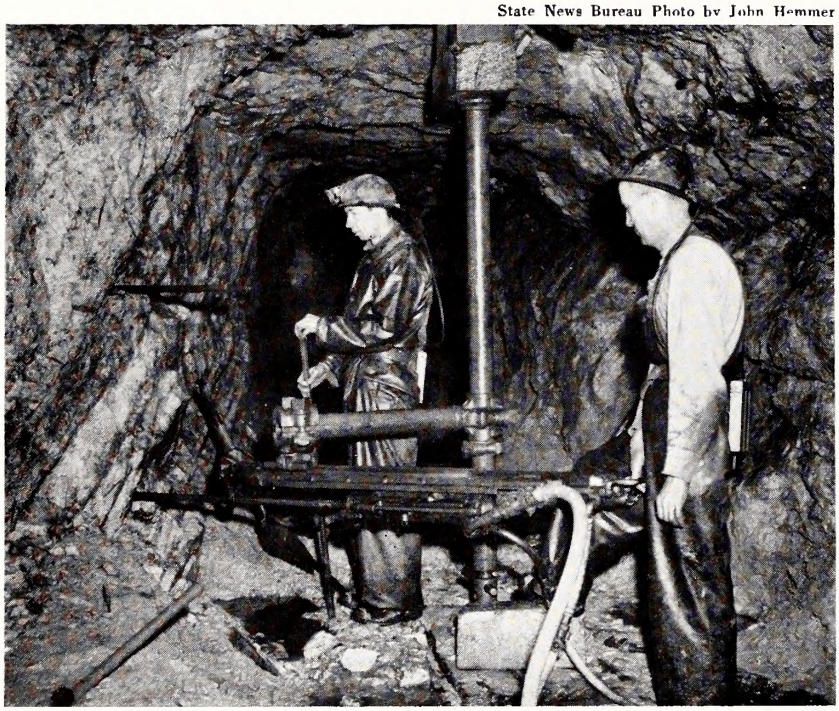
* * * *

New Fish Pond Book Published

A book of special interest to farm pond owners and anglers has been recently published under the title "Homemade Fishing" ($4.50) by Stackpole Co., Harrisburg, Pa. The author is Verne E. Davison, recognized authority on Southeastern farm ponds. The book deals with fish ponds for both trout and warm water species.

— Its Soil and Minerals . . .

State News Bureau Photo by John Hemmer



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State News Bureau Photo

. . . Its Forests, Waters . . .

Photos by Jack Dermid

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Photo by Rod Amundson

Well managed, contoured farms are the answer to good hunting. Contours check soil erosion, keep streams clear for good fishing.

GOOD HUNTING MADE EASY

by Erwin A. Bauer

Reprinted From *Nation's Business*

Wildlife Management is Simply Good Land Management

I remember a farm in southern Ohio. The owner was an old fellow who, until middle age, had saved every penny he made. Then he got married.

The new wife immediately changed his way of life. She made the farmer haul every bit of his old furniture up the draw back of the house to make way for newer things. Then she started on the unkept yard. Old plows, tools, milk cans and bed springs joined the furniture.

When I was a boy the junk pile had become overgrown with weeds and briers, and every time we passed it we were certain to jump a rabbit or two.

The moral of this incident is not that fastidious wives mean better rabbit hunting. That might help, of course, but there is an easier way—a way that groups of sportsmen in many sections of Ohio and the Midwest are using to improve local hunting and also to make friends with the farmers on whose lands the hunt.

The story, briefly, is this:

In many localities, particularly the intensively farmed areas, suitable cover and food supplies for wildlife have been depleted. Any given "habitat" can support just so much game—no more. Money spent on restocking is wasted unless the habitat is improved. Fortunately, that can be done easily and cheaply. Worn-out farm machinery, old rolls of wire, roofing, pipes and similar articles make excellent artificial shelters, or "cover," and any group of sportsmen willing to gamble some healthy outdoor exercise against a better hunting season can start the job at once.

Fence corners, gullies, eroded areas, swamps, or any small uncultivated plots are perfect for this type of "junk pile conservation." In places like these, the shelters in no way interfere with normal farming operations. Old sections of sewer pipe or old oil drums camouflaged with brush or a shock of corn can serve both as a den and a feeding station. An old bed spring covered with brush or fodder is the last word in a rabbit or quail shelter since it provides absolute protection against both winged and furred predators.

In many places businessmen, doctors and lawyers are taking every closed-season opportunity to go afield and improve their sport.

In Ohio, alone, there are 625 sportsmen's clubs, representing nearly 250,000 members, many of which sponsor at least one Saturday or Sunday "barnyard brigade." There is extra incentive here, because no group ever lost a farmer's friendship by helping to police his acres. When opening day rolls around, the chances are good that no member of the group was refused hunting privileges. This is no small factor in these times when posted lands are already plentiful and, in some states, still increasing.

There is hardly a conservation problem that planting cannot solve—and the one concerning cover and food for wildlife is no exception. Many state and federal

conservation agencies make pine and other coniferous trees available to sportsmen, farmers, and outdoor groups either free or for a nominal fee. This is an opportunity for sportsmen.

A fish and game club in northeast Ohio, for instance, bought 8,000 seedling pine trees. They made arrangements with a farmer to plant them on a hillside section of his land. The farmer plowed preparatory furrows, and on a Sunday afternoon the club members gathered to plant the trees. It was hard work, but that was forgotten when the entertainment committee arrived with a truckload of hot coffee, sandwiches and pie. The bull session that followed was far better than any that ever followed a regular meeting.

After three years, the planters began to notice that rabbits and quail used the spreading pine branches as shelter during the winter months—especially when the snow was deep.

Last winter, six years after the initial planting, the farmer received the first payment on his investment. He thinned the crowded pines and sold some for Christmas trees. Farmer-sportsman relations were aided considerably when he received his check for the trees and he thinks about his friends whenever he turns on his new television set which he bought without dipping into his regular budget.

Dividends will continue to accrue for all concerned. Through selective cutting the farmer will harvest a crop of posts in another five years. When the trees are fully matured, he will have a crop of saw timber—meanwhile permanently preserving the stand by selective cutting.

In a few more years, the pine plantation will serve the sportsmen as a "yard" for deer in winter and as cold weather cover for ruffed grouse.

Even the anglers gained from the operation, because good fishing begins back in the hills and the pines have helped solve the erosion problem on that farm. One more thing—try to convince that landowner that the trees do not improve his farm's appearance and that most sportsmen are not pretty fine fellows.

In other sections, sportsmen's groups find it pays to plant multiflora rose on the farms of their friends. Farmers who know that a matured multiflora rose hedge serves as a trespasser-proof fence will not feel unkindly toward any group that helps them realize such a hedge around the farm.

In addition to its ability to turn both trespassers and livestock, multiflora rose is a predator-resistant wildlife cover that will increase the winter carrying capacity of a farm for such game birds as pheasants and bobwhites, and that will make a certain amount of food available to wildlife in an emergency.

Sportsmen, in areas not strategically located on wildfowl flyways, are learning to lick that handicap, too. A dozen states have discovered that wood ducks, native to most of the United States and with a definite preference for nesting in hollow trees, will use artificial nesting boxes. This is significant, because suitable nesting sites for woodies have disappeared as the large timber areas were reduced.

Uniting enthusiasts can perform much work to attract waterfowl. The blasting out of potholes is a simple and inexpensive activity. Small, hastily constructed dams will impound water in certain marshy areas unsuitable for farming. Frequently the landowner can harvest a crop of mink, muskrat, and raccoon furs from these lands in payment for his cooperation. Conservation club members in at least one state have released beavers to flood additional low areas on their own club lands and now they enjoy a limited amount of duck shooting where none existed before.

In heavily wooded sections where deer and ruffed grouse are native, sportsmen can find much to do. Both deer and grouse require food which mature woods alone do not provide.

But it is a simple matter to plant food for grouse and deer—with an ax or a saw! As soon as strips are opened through the woods a good crop of herbaceous wildlife food gets under way.

Cutting forest openings is not expensive. Two good men with a gasoline chain saw can work wonders in a day. However, the ideal tool for preparing forest openings is the bulldozer. A strip 100 feet wide by 1,000 feet long in dense timber can be opened in eight hours. The value of such a strip to wildlife cannot be accurately estimated, but conservation agencies are including more and more of this sort of activity in their programs. Alert and progressive fish and game clubs are following the example.

Multiflora rose hedges are ideal farm game cover.

Forest cutting often offers other dividends. Some trees, of course, can be used as saw timber for a new clubhouse—or they can be sold. Smaller trees can be processed into mine timbers or fence posts. Still others can be sold as firewood. The remaining branches can be piled along the edge of the clearing to provide additional wildlife cover.

Wildlife management is actually a case of managing the land or water on which the wildlife lives—rather than the wildlife itself. It is also true that most conservation problems can be solved by some type or other of planting. The individual springtime angler for instance, can plant a good section of stream bank with willows while he is waiting for fish to strike. The only tool required is a sharp pocket knife and the only energy required is to cut several dozen new willow shoots. The cut preferably should be made on an angle. Thrust into the moist bank at intervals of a yard or so, the willows will take root. They will make considerable growth the first year and, in two or three more, will become effective in protecting the bank from further erosion.

Perhaps one of the finest examples of willow conservation exists at Malabar, the celebrated farm of Louis Bromfield, in Ohio. About 15 years ago the stream which flows through the middle of the farm was straightened and cleared of all vegetation. Thus unhampered, the creek carried away the best soil of the bottomlands. The deep pools vanished and, with them, the fish.

After taking over the farm, Bromfield immediately planted two miles of stream bank with willows. Today, there is no longer an annual loss of valuable pasture land; there are fish in the pools; the new vegetation along the banks affords nesting cover to many species of birds and animals.

Possibly the finest thing a sportsman can do is to take an active interest in the conservation affairs of his state, not only as related to wildlife—but also to soil, water, forestry, and even to geology. By keeping abreast of the latest trends and practices, the intelligent sportsman will not be swayed by any hairbrain scheme that is costly and destructive. It is the duty and privilege of every outdoorsman to see that his license dollar is spent wisely by professional administrators and biologists.

Nowadays, in autumn, it is possible to tramp familiar coverts near my home and see evidence of the week-end worker's efforts all about. One bright morning just after the ringneck season was well under way, I watched a pair of hunters approach the end of a stubble field that was bordered by multiflora rose. While I paused long enough to identify one as the doctor who occasionally comes to our house and the other as the man who sells me cars, five pheasants—two of them cocks—flushed from the thorny hedge.

With ease and skill that clearly indicated that this was not a first excursion afield, both roosters were promptly collected with well aimed shots.

"Nice shooting," I called, walking in their direction.

"And this year we have something to shoot," Doc answered. "Before we started improving this place, you couldn't find a pheasant in a week of walking. We changed that, all right. Anybody can have better hunting —almost anywhere!"

GROUND HOG

from page 5

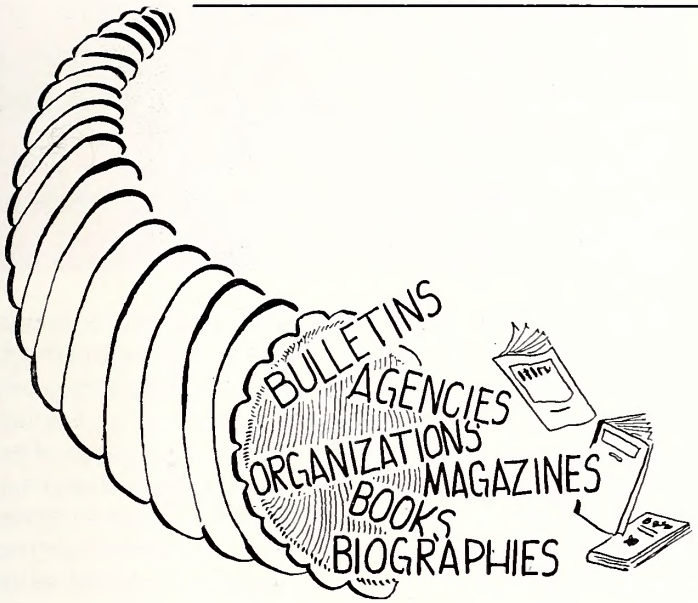
markable accuracy, at some remarkable ranges. Kills up to 400 yards are common, but it takes a little practice to do this regularly. Most hunters using these high speed varmit rifles equip them with telescopic sights because of the greater accuracy that can be achieved with this type of sighting equipment. Many excellent scopes are on the market today at reasonable prices. Four power seems to be the most popular degree of magnification used.

These ultra high speed rifles are best for chuck hunting for three reasons. They have the killing power to knock a "pasture poodle" down for keeps, the light bullets disintegrate upon hitting the ground or other objects, hence they do not ricochet, and they offer the accuracy needed for the long ranges over which most chucks are killed. The twenty-two rifle probably kills more "whistle pigs" than do the varmit rifles, and if used with long rifle, high speed, hollow point ammunition at ranges under one hundred yards, they do a satisfactory job. However, beyond one hundred yards, the .22 will wound more chucks than it will kill. A chuck may look like a pushover, but it takes some power to keep him down. Another bad point about the .22 is its habit of ricocheting bullets around the countryside. Cattle owners take a dim view on bullets whistling around their pet cattle, much less over their heads. The hunter who uses the .22 learns a lot about stalking when trying to get within range of a crafty ground hog, and this added knowledge pays off during hunting season.

Many people eat the ground hog and claim him to be delicious. If handled properly they can be, but young animals make the best eating. However, to insure this, immediately after killing, remove the two musk glands at the inner side of the front legs. Another school of thought demands that the skin be removed at the same time, and the carcass be wrapped up in a newspaper or paper bag. Before the final cooking, the excess fat should be removed, the carcass should be quartered and soaked over night in salt water or baking soda, and then parboiled (4). After these preparatory measures, the animal can be baked, fried, stewed, or broiled.

If, during the closed season on other game, your trigger finger gets a bad case of the twitches, take to the mountains and try the woodchuck. He will surely prove to be a worthy opponent who will tax your stalking skill as well as your shooting ability.

(1) *Science News Letter*, February 11, 1950
(2) *The Mammals of Eastern United States* by W. J. Hamilton, Jr.
(3) *Readers Digest*, September 1951
(4) *Holiday*, February 1950



INTEREST *Creates* ACTION

by Lunette Barber

Throughout America much money is being spent and a great deal of work done to conserve our natural resources, but the efforts will have to be increased in order to do the job efficiently enough to meet the needs. Much more can be done through education. Good conservationists and others are busily preparing helpful materials and information for education. Some of these are free and some may be purchased. There are federal, state and national organizations from which much material may be obtained. Perhaps the most appreciated source of information is good magazines and bulletins received regularly. Another inspiring source is good biographies or autobiographies, and books, books and books on the subject of conservation.

The following are lists of a few: The federal publications by agencies associated with conservation of all our natural resources may be obtained through the Superintendent of Documents, Washington 25, D. C. Write for the publication which describes each subject in which you may be interested—reptiles, birds, trees, minerals, soil, water, mammals, conservation, etc. Much of this material is free or is reasonably priced.

Many of the state agencies of North Carolina have materials available for distribution with helpful information. For a list of these agencies, see the North Carolina Almanac.

Some of the national organizations that have much to offer are—

The National Audubon Society
1000 Fifth Avenue, New York, N. Y.

Izaak Walton League
31 North State Street
Chicago 2, Illinois

Sport Fishing Institute
427 Bond Building
14th and New York Ave., N.W.
Washington, D. C.

National Wildlife Federation
3308 - 14th Street, N.W.
Washington 10, D. C.

The Wilderness Society
1840 Mintwood Place, N.W.
Washington 9, D. C.

A few helpful magazines are Nature, National Geographic, Outdoor Illustrated, Natural History, Audubon, and many hunting and fishing magazines, besides Wildlife in North Carolina.

A study of the works and writings of these men will be a source of inspiration as well as information—Izaak Walton, John James Audubon, John Burroughs, John Muir, Gifford Pinchot, Theodore Roosevelt, T. Gilbert Pearson, H. H. Brimley, Aldo Leopold, and Dr. Hugh Hammond Bennett.

The above agencies, organizations, magazines, and conservationists are but a few of the sources from which information may be secured. A complete list would more than fill this publication. The above few have been suggested because of the many requests that come to this office. The more knowledge gained of a subject, the deeper the interest becomes, so let's get educated on the subject of conservation of our natural resources. Interest creates action.

SCHOOL PAGE

(Part 2)

HOW FISH

by J. E

Illustrations l

We have seen how reproduction occurs among the members of the sunfish family that includes both the largemouth and smallmouth black bass. Now let's take a look at the private lives of some other species and see how they go about providing for the perpetuation of their kind.

Reproduction among the trout is a somewhat different procedure. They build an entirely different type of nest for their eggs. In late August and September, the brook and brown trout start to move upstream from the larger waters into the spring-fed branches. In the smaller streams they are particularly vulnerable to enemies, especially fishermen. At this time of year they must be protected because they are the fish which will produce the young ones for future fishing.

As the water becomes cooler, they continue to move upstream into the smallest spring runs where the water will not freeze during the winter. Their spawning seems to be controlled by temperature too, but they lay and fertilize their eggs when they find water cold enough to suit them rather than warm enough as the largemouth did.

The female trout takes over the job of nest building while the male is busy driving rival males away. On a fine gravel bottom, she presses her tail onto the gravel and moves it vigorously from side to side. The current washes the loosened gravel down stream. As she continues this procedure, a depression is formed which serves as a nest.

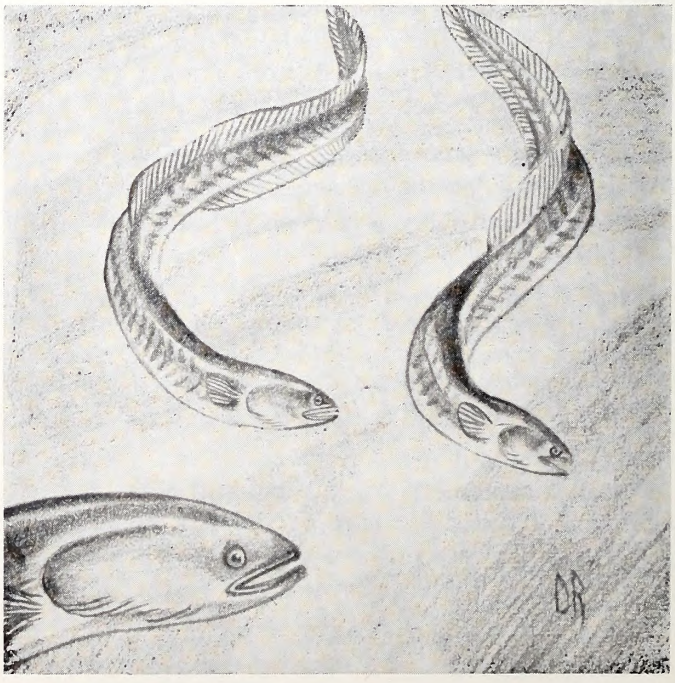
After the eggs have been laid and fertilized, she moves to the upper edge of the nest and loosens more gravel to place a protective layer of it over the eggs. Since these eggs are laid in a running stream, it is not necessary for one of the fish to fan them continuously during their incubation. Fresh water reaches them continuously through the gravel. The female does not lay all of her eggs at one time but moves on upstream after completing the first nest and starts the excavation of a new one. The gravel from the new nest helps to cover the first one until an actual mound is formed on the stream bottom. A single female may build several nests in a straight line up the stream. After the nests have all been built, the eggs laid and fertilized, and the nest covered with the gravel, the parent fish have done their duty and go off about other business.

We observed that it takes a definite amount of heat for eggs to develop and hatch. Since these eggs are laid in the fall, they lie in the cold gravel nest all winter and do not hatch out until the water begins to warm up in the spring. The exception to this procedure is the rainbow trout which characteristically waits until very late winter to lay its eggs. Consequently, they have a much shorter incubation period. They hatch out at about the same time the brook and brown trout eggs do in the spring.

There is another noteworthy difference in the spawning details of the trout. While the brown and rainbow

The larger female rockfish (striped bass) is usually escorted by several males at spawning time.

The eel spends its adult life in fresh water, moves to the sea to reproduce.



REPRODUCE

rnell
ıne Raver

move upstream and cover their nests from the upstream edge, depending on the current to push the gravel over the eggs, the brook trout is different. After the female has laid her eggs and they are fertilized, she covers her nest by pushing gravel over them from all sides of the nest rather than just the upstream edge. This may seem like an inconsequential detail, but also it may account for the fact that brook trout can spawn successfully in ponds having a spring seepage in the bottom, whereas the rainbow and brown trout find it impossible to do so.

The spawning of the Atlantic salmon is very similar to that of the trout. This might be expected since they are all of the same family. The principal difference is that the salmon are anadromous fishes and spend most of their lives in salt water, only coming into fresh water to spawn. However, when they are ready to spawn, they move into fresh-water streams and up to the headwaters, sometimes hundreds of miles, there going through the same spawning procedure as do the trout. When the young salmon emerge from their gravel nests, they slowly move downstream and enter the ocean to grow up.

Other important anadromous fishes which come from salt water into fresh water streams to spawn are the shad and the herring. The spawning runs of all the anadromous fishes seem to be controlled by temperature, just as the spawning of the inland fish. In northern Florida the shad move upstream very early in the spring. The run takes place some weeks later in North Carolina, and still more weeks later in the New England states. However, the spawning runs all seem to take place at approximately the same water temperature.

Not all fish build nests, however. One of the best examples is the striped bass or rock of the Atlantic Coast. This is an anadromous fish, living in salt or brackish water most of the time, but swimming far up fresh-water streams in order to spawn. They start moving upstream when the water temperature is in the 50's, and the first eggs will be laid promptly when the water temperature reaches 60 degrees. Many people have observed "rock fights," and this is the actual spawning act.

Male rock are old enough to reproduce at the end of their second year, but most females are not mature until their fourth year when they have reached a length of about sixteen or seventeen inches. Consequently there are many more male than female fish on the spawning grounds. It is for this reason that the species should be protected until they reach a size of 16 inches in order to insure adequate natural reproduction for the perpetuation of the species.

They do not build nests. When the female is ready to lay her eggs, from a few to as many as fifty males will press around her, each trying to fertilize the eggs as they are extruded. In their efforts to be next to the female when the eggs are laid, the males may actually lift her bodily from the water. Once the eggs and milt have been extruded, the possibility of any one egg being fertilized is purely a matter of chance.

Pickerel eggs are laid in geletinous strings on aquatic vegetation.

The smaller male trout stays slightly behind the larger female during spawning act.

The preferred spawning grounds are the rapids of a fast flowing stream. The fertilized eggs are only very slightly heavier than water and are not adhesive. They are carried along by the current and drift downstream without further care from the parents. After three or four days, depending on water temperature, the eggs hatch and the sac fry are at liberty. They continue to drift with the current until the yolk sac is absorbed and they are able to swim. At about this time the current of the fresh water stream has returned them to a sound or a bay where all that have survived the journey, and have not been eaten by various predators, are ready to begin life as baby striped bass.

Probably it is because they receive no parental care that a large female may lay more than a million eggs at one time. Such numbers are necessary for the preservation of the species. Most of the fish living in the ocean follow this general method of reproduction. That is, the eggs are broadcast at the time of fertilization and the survival of any particular egg is purely a matter of chance as it drifts in the ocean currents.

The white bass is the fresh-water cousin of the striped bass or rockfish. Because they are so closely related, it's not surprising to find that their spawning procedures are very similar. The rock has the physiological requirement of spending some time in salt water before it can move into fresh water and spawn successfully. The white bass, on the other hand, spends its entire life in fresh water. It lives in the larger lakes and reservoirs, and when spawning temperature arrives in the spring, the fish move up the tributary streams until they find suitable rapids for spawning sites. There they lay their eggs free at the surface of the water and the eggs develop as they are being carried down stream to the reservoir from which the parent fish came.

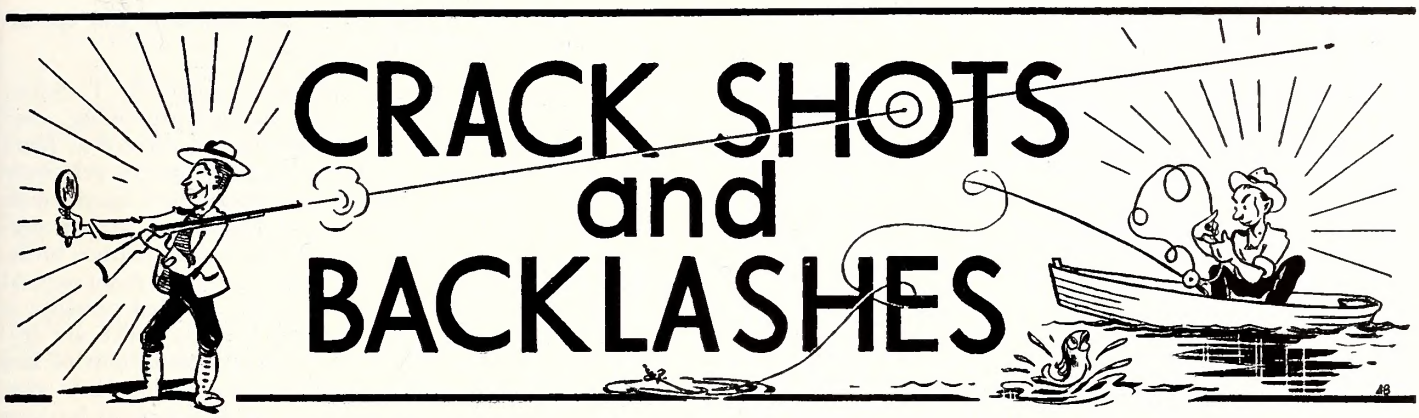
The pickerel or jack has very specific requirements for successful spawning, which are quite different from many of the other game fishes. The jack builds no nest, and its favorite spawning location is in shallow weed-infested waters where very little current is found. The eggs are adhesive and are laid in long gelatinous strings. The female drapes these strings of eggs over whatever vegetation may be available, and they are left to hatch without parental care. This spawning behavior is essential for survival of the species because pickerel are most often found in shallow silted ponds where the eggs would sink into the mud and suffocate if they were not supported by the vegetation.

The walleyed pike is intermediate between the nest builders and the free spawning species. It lives in the cool waters of a lake during most of the year. When spawning temperature arrives, it will swim to the mouth of a tributary stream where there is flowing water to provide oxygen and where rocks or gravel provide a hard bottom to keep the eggs out of the mud. The eggs are laid among the stones in large numbers without an actual nest being built. No further care is provided by the parents.

One of the most amazing methods of reproduction is found among the fresh-water eels. Those species of fish which came from the ocean into the fresh water to spawn were called anadromous species. The eel is a catadromous species because it spends its life in fresh water but moves into salt water to spawn. Many years of tracing these fish has developed the information that they live in fresh-water streams for several years until they reach spawning condition. At that time they migrate downstream into the ocean and move across the ocean floor to the vicinity of the Sargasso Sea. This area of the Atlantic Ocean is northeast of Porto Rico and southeast of Bermuda. It appears that the eels from all the Atlantic watershed concentrate in this area for the purpose of reproduction. Presumably the adults do not live to make the return jounrney, but the young eels return to the various streams of the Atlantic Coast and move upstream until they find suitable locations to spend their lives. There they live until they develop to the point where they take their turn in the spawning migration.

There appear to be two basic biological principles involved in the reproduction of fishes.* Each species follows some general spawning procedure which provides for the eggs being supplied with oxygenated water, and which keeps the eggs from being suffocated by silt. These conditions may be provided by the actual spawning location or by parental care. The average number of eggs laid by any species seems to be in inverse proportion to the care the young receive from the time the eggs are laid until the new individuals develop. Presumably this is Nature's method for providing an adequate number of each species to reach maturity, regardless of the hazards experienced in their development. The greater the chance of loss, the more eggs are laid; the greater care the eggs receive, the fewer there are.

The second principle concerned is the temperature at which the various species spawn. It appears that the predator species, which feed principally on other fishes, spawn at a lower temperature than the forage fishes which serve as their food. This may not be true in every case, but it appears to be a valid generalization. Among the lake species, for example, we find the yellow perch and walleye spawning between 45 and 50 degrees, the pickerel at about 56 degrees, the crappie at 58 degrees, and the bass at about 62 or 63. By the time the young of these species have developed to the point where they are ready to eat other fish, the young of the forage fishes are beginning to swim. Among the forage fishes we find, for example, the chub sucker spawning at 62 or 63 degrees, the brown bullhead at 77, and the white catfish at 80 to 82 degrees. Indeed Nature has a complicated system for providing that each species have a supply of its favorite food at the proper time, and still providing for adequate escapement of each species so that none are entirely destroyed.



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Our January issue announced State Wildlife Federation Week under the auspices of the N. C. Wildlife Federation. The week launched a membership drive in local chapters of that organization, a significant enterprise. But more significant was the campaign launched by the State Federation against water pollution, the despoiling of our streams and coastal waters by silt and sewage and industrial waste.

Pollution is not a pleasant word. It connotates filth, waste, and disease. The complete control of pollution costs money, money collected in taxes by state and city governments and money spent by commercial enterprises to convert sewage and poisonous chemicals into harmless solutions. Unless pollution is completely curtailed, time will prove that it is far more costly than the expense of water purification. The cost will be reckoned in human lives and valuable natural resources.

Next month, the week of March 21-27 will be set aside as National Wildlife Week. Sponsored by the National Wildlife Federation, the keynote of this week will be "Clean Water For All America." In other words, water pollution control.

The waters of North Carolina and the nation will continue to be running sores on our land until the people of the State and Nation are awakened to the horrible consequences of uncontrolled pollution, and demand corrective action.

* * * *

A few balmy breezes will have a half million Tar Heel anglers thinking seriously about going fishing (in unpolluted waters, of course) and here is a helpful letter from C. L. Magness on an all-important subject to fishermen,—bait.

"Dear Sir:

So much has been written on fishing these days and we have so many that like to fish I thought it might be interesting to bait owners and those interested in raising bait for sale to have an article on the rearing of the Golden Shiner Minnow. As you know the only way to have enough bait to run a business is to raise your own. As the creeks and small streams can't be expected to supply the large demand for minnows and furnish food for the stocked rivers and dams.

We here at Magness Hatchery have 5 lakes—the lakes are built with sloping bottoms and varying in depth from 1 to 6 feet. Each has separated drains so that they might be drained when necessary. The water is piped in so that it can be controlled when needed. So much for the construction of ponds.

The Golden Shiner is one of the most productive of all minnows. They do quite well in small ponds, and are considered by most fishermen as the best bait you can get for any kind of fishing.

I would estimate that we have raised 100,000 this year, that is if nothing goes wrong from now on. We have small fingerlings for sale now and will have this fall adult shiners and bass minnows in any size they want. The secret of the golden shiners is to fertilize your

HOUND ADOPTS KITTENS

Wildlife Protector Marvin Ward, Durham sent this photo of his hound nursing a litter of kittens which were orphaned when a car ran over the mother cat. Kittens were 2 weeks old when adopted, dog raised them through weaning time.

ponds so as to have plenty of food for the very many young fish. We fertilize every 15 days.

This is the only solution for one who wishes to start a business or to one already in it. The fishing demand is so large that it is impossible for the small stream to cope with it.

Our shiners sell for:

Fingerling	$7.50 a hundred
1-2 inches	8.50 a hundred
2-3 inches	12.00 a hundred
3-4 inches	15.00 a hundred

Along with our minnow hatchery we have a worm ranch. I raise hybrid Red Wigglers and earth worms. This also is a must to one who has a bait business.

I hope this will be of interest to some of the bait raisers and sellers, and we would be glad to have anyone interested visit us. We will be of as much help to anyone as possible in getting their bait business started.

Sincerely,

C. L. Magness"

HOW WILD ARE WILD GEESE

Lane Lee, caretaker of Gaddy's Pond, feeds a wild Canada goose. Of the 10,000 geese wintering on the pond, only a few will take food from the hand.

This chatty letter from Archer Dillard of Charlotte points up the thoughts of many a Tar Heel dove hunter. The imminent success of last year's early September season vouches for Critcher's article and the opinions of dove shooters.

"Dear Sir:

I have again read N. C. WILDLIFE from cover to cover, and thoroughly enjoyed it. I've been a subscriber just about from its beginning. After many years of wandering, I am at last back in the Old North State, and my old home town of Charlotte. It is good to be back. I can hardly wait to get to Gaddy's Pond and Lake Mattamuskeet with my camera this fall.

It is very gratifying to me to see how very much N. C. WILDLIFE has remained a real wildlife magazine, pure and simple, pleasing to the naturalist and sportsman alike, and offending neither.

I enjoyed the dove management article by T. Stuart Critcher very much. It is quite thought-provoking. Correct me if I'm wrong. The conclusion I arrived at from his article is that it would be better to have a relatively early dove hunting season, coinciding more nearly with the peak dove population, and bagging a higher percentage of the current year's crop, or less mature birds, before the population has declined so much from natural causes. Then close the season earlier, so that pressure is taken off the remaining nucleus of birds which are trying to survive under the more adverse conditions of late fall and early winter, especially since the birds that comprise this late kill are most likely going to be next year's breeders, and thus the late kill has a more direct decimating effect on next year's crop.

Conclusion; we should have an earlier start, and an earlier end, to our dove season.

This is just a kind of bull-session. I know you're busy, and no reply is necessary to this letter. Keep WILDLIFE just like it is, and the more pictures like that waterfowl spread, the better I like it!

With appreciation,

Archer Dillard, Jr."

"Dear Sirs:

Since the hunting season is in full swing now I think it is necessary that someone lets you know how things are going in our state of plenty for each and every sportsman who follows all rules and regulations.

Since game appears to be scarce in our community I was wondering if we have a game protector as I have not seen one. Several people of which you could not call a sportsman have been acting as "game hogs" if I am permitted to say so. I have even heard them say they had taken almost one-third as many squirrels in a half day as one is permitted to take in one season.

Also I was discussing with my parents about supplying more food and cover for wildlife as it appears to be necessary. As it appears that the quail has been killed out, my father wanted to know if it was possible for us to secure a pair or several pairs of quail as we have already planted 1000 Bicolor Lespedeza plants and are planning to plant more Lespedeza and plant some Multiflora Rose.

I would like for you to answer a question in an issue of "Wildlife In North Carolina." What is the present outlook of game in North Carolina? Meaning is game going to be destroyed or will it gradually be restored.

I should like to hear from you on the happening in our state if it is at all possible.

Thanking you in advance, I am

Yours truly,

Joe Corriler"

There is at least one wildlife protector in every county, two in many counties. These men work hard, but they can't be everywhere at once. Reader Corriler won't need quail to stock the lespedeza and multiflora rose plantings. Wild native birds will find it soon enough if it has been properly planted.

James Conrad, Treasurer of the High Point Wildlife Club, offers $25.00 reward to the person who furnishes information leading to the recovery of a Red Irish Setter Pup lost five weeks ago, age five months. (Description of dog—White spot on chest, red-tipped nose, green eyes, female.) Phone 4548, address, P. O. Box 1807, High Point, North Carolina.

Bishop Galyean of Lowgap wants to rib some of his friends with this anecdote. At the same time his story points up the fact that some hunters have notoriously poor eyesight since humans are all too frequently killed when mistaken for game:

> "On November 28 a party of rabbit hunters was down on Fish River rabbit hunting, and they ran across a buck deer close to the road that had been killed. So they examined it closely to see if it had been shot or killed by a car. They reported it to me and I went and investigated. When I got there, what do you think I found? It was a Jersey calf about a week old that someone had thrown out. I certainly have had lots of fun out of those fellows about this. I told them their licenses ought to be revoked. Anyone that couldn't tell a bull calf from a deer is likely to shoot anything . . ."

Harry Cornell of the Commission's fish division replies to this query from O. L. Anderson of Anderson's Barbershop in Fair Bluff:

> Dear Sirs:
>
> I would like to know does a fish have sense, or does he have instinct? If you have a book on this I would like to get one.

Dear Mr. Anderson:

Fish do have senses very similar to our own, in that they have the ability to hear, see, feel, taste, and smell. In different species these senses may be more or less highly developed. For example, the sense of smell is highly developed in the catfishes, but the sense of sight is much more highly developed in the game fishes, as bass and trout, which feed principally by sight.

Fish have the ability to learn, as shown by the fact that they can be trained to come to different colored lights for feeding. Also, they have been taught to come for food when certain sounds are made. So far as wild fish are concerned, however, we believe that their lives are principally governed by instinct rather than by reason.

We know of no book devoted to a discussion of these subjects. References are usually scattered through the available fish literature. For more than the past year our WILDLIFE IN NORTH CAROLINA has been carrying a series of articles on this subject. Reference to the last fourteen issues of our magazine will provide you with additional information on this subject.

Cedar waxwings often line up on a limb and, apparently for pleasure, pass a berry back and forth along the line.

PROTECTOR OF THE MONTH

J. O. Teel

Mr. J. O. Teel was born on a farm near Greenville, North Carolina, and attended the Greenville City School. After graduation, he continued to live on and operate the farm until 1937, at which time he accepted the position of Wildlife Protector in Pitt County. With 16 years of service behind him, Mr. Teel has the respect of all who know him for his impartial treatment of those with whom his duties bring him in contact. As an example of his perseverance, Mr. Teel once worked 28 consecutive days on an aggravated case, apprehending the violator on the 28th day after a 12-hour vigil.

ENFORCEMENT RECORD FOR NOVEMBER

(Total in State)

Persons checked	41,663
Prosecutions	966
Convictions	860

A total of $8,643.35 in fines was collected and paid into the school funds of the counties in which the convictions were obtained. Fines were not collected, being either suspended or not levied in 26.51% of the total number of convictions.

IT'S THE LAW!

Question: Is a Wildlife Protector authorized to confiscate a vehicle used in a game law violation?

Answer: No. Protectors are empowered to seize equipment used in game or fish law violations and to deliver the same to the county sheriff pending trial of the offender. In certain instances, specified by statute, and subject to the rights of innocent third parties, the *court* has discretionary power to order confiscation of the equipment.

NATURE'S MORON

Denizen of scrub woods and hedge rows – he is Nature's living museum piece

A true omnivore – he eats everything from fruit to carrion – low on the scale of development – he is stupid yet interesting

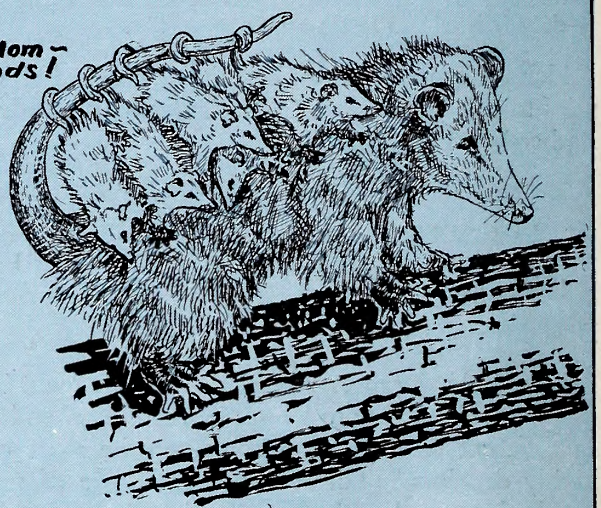
He's a night prowler and not above raiding a hen house

BRE'R POSSUM

"Playing possum" is a real act which often saves his life – his enemies are horned owls – foxes and man

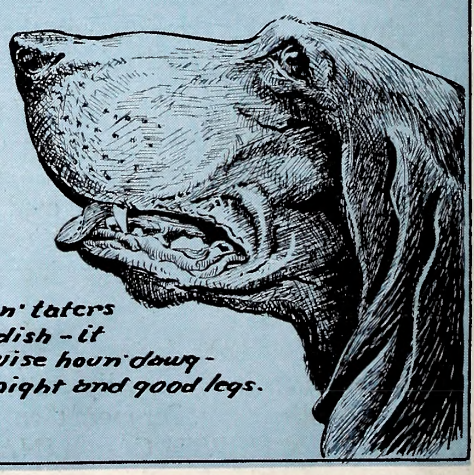
The tail is naked and prehensile – the fur has some commercial value

Look Mom – no hands!



About 20 young are born but mama has lunch-room facilities for 13 only – gestation is only 12 to 13 days – development is completed in the mother's abdominal pouch

The size of honey bees 18 young wouldn't crowd a tablespoon



Possum an' taters is a good dish – it takes a wise houn' dawg – a frosty night and good legs.

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Wildlife
IN NORTH CAROLINA

TEN CENTS

MARCH · 1954

Photo by Jack Dermid

Signs of Spring . . **When pussy willow catkins are in bloom and the spring peepers set up their cheerful chirping, spring has come to North Carolina.**

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

WILLIAM B. UMSTEAD
Governor

North Carolina Wildlife Resources Commission

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COVER

With the March full moon, Canada geese that have been wintering in North Carolina will fly to their northern nesting grounds.

☆ ☆ ☆

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Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Anne Taylor ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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Wildlife is a Managed Crop

by Robert M. Salter

Reprinted from *Soil Conservation* magazine

Photos by Jack Dermid

The Chief of the Soil Conservation Service speaks on behalf of "a coordinated, total resource-use program."

A Product of the Soil

Wildlife is a product of the soil, trees, grass and grain and is an important agricultural crop. Since the same land that produces our food supports the major part of our wildlife, the technologies we use in management of our farm and ranch lands inevitably have a major bearing upon the size and quality of this wildlife crop.

We are continually faced with the problem of fitting wildlife practices in with the management of the land for food production. Solution of the problem calls for practical understanding and cooperation by all concerned, on or off the land—farmers and sportsmen, wildlife conservationists and soil conservationists.

As I see it, the job we are up against is for all of us together to do everything we can to foster appreciation and production of wildlife by all those who manage our lands, at the same time being realistic in recognizing the practical economic facts involved in primary agricultural production. This can be done, I sincerely believe, without halting progress in drainage, flood prevention, or other land management measures essential for food and fiber production. And it can be done without wantonly sacrificing our game, furbearers, wild fowl and fish life. There *is* a sound middle ground.

Because so great a percentage of our land has been fenced and plowed, the farms and ranches of today comprise the country's principal wildlife habitat. By the same token, *the farmer is our principal game manager.* Moreover, most of the water that supplies our lakes and streams, as well as a great deal of that which empties into the sea, drains from or across these same farm and ranch lands.

Farmers and ranchers, as primary suppliers, will continue to have a great deal to say about our hunting and fishing. Their understanding of the importance of wildlife in our land economy is essential.

A basic tenet of the Service program long has been that the conservation of soil, water, forest, grass, cultivated crops, and wildlife must be tied together and scientifically coordinated on the basis of land capability and need. Encouragement of beneficial wildlife is an integral part of our soil conservation objectives.

Let's review some of the common soil and water conservation practices that are beneficial to wildlife by providing food and cover and general improvement of habitat. One of them is strip cropping, in which strips of tilled crops are alternated with strips of grass and legume crops. No less than 7 1/3 million acres already have been converted to this pattern of farming in soil conservation districts.

Another practice is use of cover crops, with some 20 million acres planted to a wide variety of legumes and other plants. Stubble mulching is in use on upwards of 50 million acres in districts.

Of course, there has been the substantial development of farmland areas specifically for wildlife, through developments such as field borders, planting odd areas, and protecting and improving marshland areas more

valuable for wildlife than for agricultural use. As was the case with the other practices in the coordinated conservation program, more wildlife area improvement was accomplished in districts last year than in any year before, bringing to 1¼ million acres the total area thus treated.

Also important is the building of farm and ranch ponds, most of them primarily to provide water for livestock, supplemenatl irrigation or other farm needs, but with attention given by our technicians to fish production and wildlife use. The Soil Conservation Service alone has given technical assistance in the building of more than a quarter of a million ponds in the last 15 years. Many of them have created duck habitats where none existed before.

On many farms water is being impounded on low, wet lands that previously were of little use either for wildlife or farm crops. A couple of hundred such impoundments in the Allegany Soil Conservation District in New York have proved their worth in attracting and sheltering wartefowl. One of them, a 6-acre marsh, produced three broods of mallards the first year and sheltered large flocks of migrating ducks and geese in the fall, in addition to attracting deer, raccoon and smaller wildlife.

A properly coordinated land-use program anywhere must of necessity take into account many factors besides merely the development and management of plow land and pasture. Thus, the Service considers the conservation and improvement of the Nation's woodlands to be an integral part of its coordinated program. Here, too, we approach the job, not as a primary forestry agency, but as a technical corps experienced in evaluating the capabilities of the land and in assessing the resources and requirements of the farmer.

Part of our job is to encourage the landowner's appreciation of his woodlands in his over-all farm operation, and to help guide him in doing what is needed to protect, maintain and utilize the woodland correctly. That is, not for wood products alone, but also for watershed protection, erosion control and wildlife habitat.

Our vast acreages of native grasslands, or range land, likewise are of such major importance in our agricultural economy that they require a proportionate share of our attention in developing the Nation's coordinated soil and water conservation program. Here, of course, the primary objective is the improvement and maintenance of forage for livestock so essential to supplying us with meat, wool and leather. This same land, however, must support an important share of our wildlife. The job is to see to it that the needs of both domestic livestock and wildlife are met and soil moisture conservation problems solved.

Experience has shown that this can be done effectively through range improvement and management practices that result in more grass for better feed and ground cover, and development of adequate water supplies. Taking unsuitable lands out of cultivation and seeding them to grass, or planting them to trees, and discouraging the cultivation of grass and forest land not suitable for cropping, also has helped immeasurably to improve the conditions for the perpetuation of wildlife.

The wildlife benefits accruing from tree planting and farm woodland management are well known. The forestry part of soil conservation district programs to date has included close to a million acres of tree planting, between 11,000 and 12,000 miles of field windbreaks, and about 19 million acres of conservation woodland management. Meanwhile, range and pasture improvement, which improves food, cover and water for wildlife, has been applied on 78 million acres in districts; and range and pasture seeding has totaled 12¼ million acres.

Watershed development and upstream flood prevention work is a growing and important field of conservation of great interest to all who are concerned with improvement of our renewable natural resources Watershed treatment includes, in addition to conservation farming, range management and forestry measures, many works of improvement, such as small floodwater retention dams and reservoirs, diversions, and channel stabilizing structures.

The benefits of watershed improvement to fish and wildlife are many. Flood-prevention treatment results in improved habitat for wildlife on watershed lands, through increase in grass and legumes, shrubs and trees. There are benefits to waterfowl, fish and furbearers through establishment of ponds, small dams, and other water-holding and water-detention structures, stabilization of stream flow, and reduced sedimentation of streams, reservoirs and estuaries.

Drainage of wet lands is a conservation practice about which there has been some difference of opinion between soil conservationists and wildlife conservationists. There are approximately 100 million acres of wet lands including marshes, swamps and small water areas in the United States at present. Much of this acreage is intermingled with drained land on thousands of farms scattered throughout the country. Estimates made from surveys by the Soil Conservation Service indicate that not more than one-fifth of the acreage of wet lands is suitable for cropland under present conditions. The other four-fifths of the acreage is not suitable for cropland or for pasture either because the soil is unproductive or it is uneconomic to drain the land. We know that much of this latter area can be improved for waterfowl and furbearers; and it is our policy to encourage such development by the owners.

Most of the drainage that has been done by farmers and ranchers with technical assistance from the Soil Conservation Service has been accomplished by tiling and open ditches on cropland and pasture. Less than 1 percent of the 7½ million acres' total drainage with which the Soil Conservation Service has assisted has

Flying squirrels are creatures of the night, seldom seen in daylight hours. Den trees make good wildlife homes, should not be cut down.

affected swamps, marshes, or open water areas of any conceivable value to waterfowl.

Wildlife conservationists have been especially concerned about drainage in Gulf and Coastal Plains states. I believe that this problem can be resolved. The national needs for food and fiber at this time do not demand bringing much of this land into production. Under current price relationships, it is uneconomical to do so.

Whether extensive reclamation work in this area becomes necessary will, in my opinion, depend to a large extent on how fast we get on with the conservation job on land now in production. The faster we move on the job of improving and protecting the land now in cultivation in all parts of the country, the longer we can leave these lands for wildlife use. I consider some of this land as a reservoir of future potentials that can be put to crop use if our national food situation demands it.

There is, of course, some land to be found on farms now being operated where drainage is necessary to improved economic operations. Such an instance in Maryland was the subject of that State's winner in last year's soil conservation district speaking contest. His farm is in the swampy area of southern Maryland. Fields once farmed have turned to swamp because of silt deposits resulting from top soil eroding from the higher land in the watershed. His richer deposits of wealth lie locked away in the swamps. He needs to get his land drained for economic production. I'm sure that wildlife conservationists understand his needs and want to see his drainage problem worked out. I believe it can be worked out without sacrificing wildlife.

Wildlife conservationists have also been concerned about pot-hole drainage in the Dakotas and Minnesota. Here, without doubt, there is a conflict of interest between the farmer and wildlife conservationists.

This problem has come about because of progress in modern agriculture. Years ago the pot-holes were difficult and costly to drain. Working around them with horse-drawn machinery wasn't too bothersome. Now, machines have made it relatively easy to drain the pot-holes at relatively low cost. With the mechanization of agriculture, the pot-holes have become a bigger nuisance to the farmer. Farmers get stuck with tractors where they didn't with horses. Consequently, there has been recent increased interest in pot-hole drainage.

I believe there is a need for helping farmers to recognize fully the wildlife values of pot-holes. The farmers who own the land are the ones who need to be convinced. Decisions to drain are private decisions. We believe that if farmers have full information on the wildlife values of pot-holes, many would be willing to make the economic sacrifice and put up with the inconvenience necessary to leave them. Getting this full story to farmers, I believe, is a challenge to wildlife conservationists.

Certainly, there is no conflict in thinking when it comes to such operations as tile and other field drainage for wet crop or pasture lands or rehabilitation of old ditch drainage systems. And when the landowner wishes to explore the possibilities of draining marshes, swamps, or areas of open water, Soil Conservation Service technicians are guided by careful use capability surveys that indicate soils which might be more useful for wildlife habitat than for agricultural purposes.

It is also Service policy, as a further safeguard to all interests concerned, to draw upon, in addition to its own engineering and other technical facilities, the advice of the Fish and Wildlife Service and the State wildlife agencies before detailed plans are prepared for drainage of swamps, marshes, and areas of open water.

It is only when wildlife conservationists and soil conservationists both work with farmers that it is possible to arrive at adequate information on the effect of any proposed drainage on both the land and wildlife and to bring to the attention of soil conservation districts and individual farmers the facts necessary to insure consideration of wildlife in the proper use and treatment of the land.

That is the Service's honest aim. In working toward it, we will go as far as we can to discourage drainage of land that is better suited to wildlife, particularly water-

fowl, than it is to the production of crops. Sometimes, in fact, we have occasion to go even further, and help put water back on land instead of draining it off, as I have already mentioned.

While the Soil Conservation Service is trying to do all it can to protect and improve wildlife on the farms and ranches of the United States, technical assistance in conservation cannot fully dissolve the conflict of interest between farmers and wildlife conservationists. In fact, I doubt whether the conflict can be totally resolved without a more intensive effort to develop greater farmer appreciation of wildlife, and without methods for compensating farmers for hunting and fishing privileges.

Many farmers tell us that one of the satisfying results of practicing soil and water conservation farming is the restoration of even better game than originally inhabited their farms. It is something they can enjoy and share with others.

Clean fence rows, bare, eroded slopes are not conducive to an abundant crop of wildlife.

Direct returns from their increased wildlife have been realized and welcomed by many conservation farmers over the country. These range from fish and game for the table to revenue from furs, fish, and hunting and fishing leases.

Soil conservation districts constitute an ideal focal point for bringing to bear the cooperative efforts from many sources that are necessary to meeting the problem of increasing production of beneficial wildlife on American farm lands. These districts have obtained cooperation in these efforts from the Fish and Wildlife Service, State game departments, agricultural experiment stations and other agricultural agencies and leaders, sportsmen's organizations and wildlife conservation groups, and other interests, including schools and youth organizations. Through the Pittman-Robertson wildlife habitat improvement programs, for example, 35 states now are providing assistance to soil conservation districts.

The support and cooperation which wildlife conservation groups have given soil conservation districts in the past have been most substantial, indeed, and have gone far in helping the districts to show the way to greater wildlife abundance through soil and water conservation work on the country's farm and ranch lands. The opportunities for continued and expanded teamwork in this field are virtually unlimited. The whole, broad conservation job ahead depends for its successful advancement and completion upon the efforts and contributions of many people and interests working together. The goal is a coordinated, total resource-use program that benefits the entire Nation, as a basis for building for future welfare and national security.

ARBOR DAY

March 19 is Arbor Day throughout the nation. It is a day set aside and observed to recognize the importance of trees to the American way of life. Will your school or your club, or you as an individual plant trees on this day?

SPRING TUNE-UP *for* SPRING FISHING

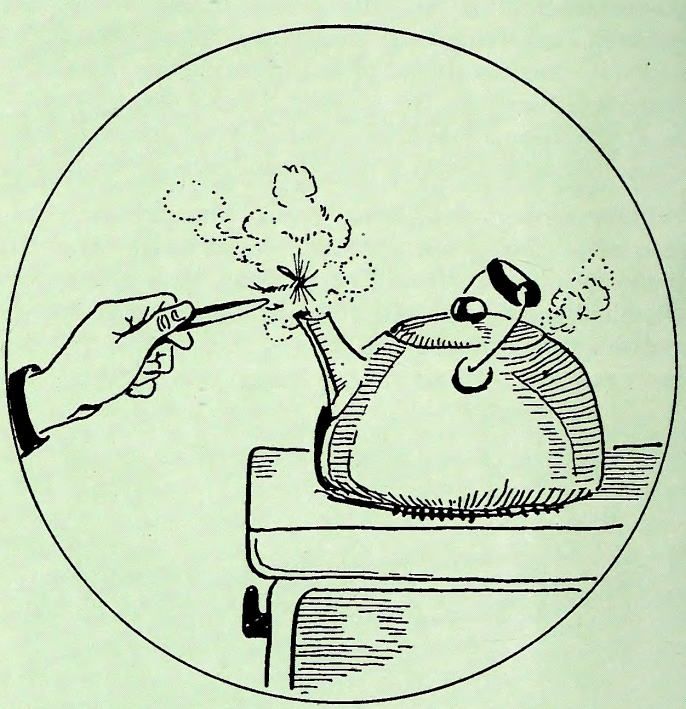
BY DUANE RAVER

Fisheries Investigator

Among the great variety of pleasant things that the early spring brings us is the first fishing of the year. It doesn't take long after the first soft, fragrant breezes ripple the water for the fisherman to start pawing in the tackle box for flies and hooks, and reels and plugs. Those hardy souls who have been out on the lake or pond all through January and February have the situation pretty well in hand. But for those of us who ducked for cover about the middle of November, the fishing equipment department may be in need of attention. Successful fishing begins with well cared-for tackle. So now that another season of angling is almost upon us, let's look at some of the things that may add a fish or two to string.

There is no substitute for a strong, sharp hook, whether it's used for bait or has a bunch of feathers tied on it. This may call for an evening spent with a small file and a pair of pliers, touching up bent or dulled points. Plugs subjected to a year's use probably have loosened and dulled hooks in addition to chipped and worn paint. Plug hooks should be removed where possible and either repaired or replaced. Steel wool and emery paper will often solve the corrosion problem. Broken hooks are easily replaced with new ones, which should be kept on hand for this purpose. If you still use snelled hooks or flies, check them carefully for rotted connections. The snells may be replaced with new nylon material. Actually the advantages of snelled hooks are so few that it may be that you will discard them altogether.

Don't throw away those ragged, bedraggled flies just because they *look* worn-out. They may be the best ones in your box because they have that buggy appearance. Check the hook and the head windings. A drop of clear finger nail polish will secure the thread and 30 seconds over the steam spout of the teakettle will restore the flies to usefulness. Dry flies especially may need this steam treatment to spring the hackles back in shape. Streamers may have become rust stained and thus have lost their effectiveness. But unless the tinsel is tarnished and the feathers or bucktail is too badly discolored, they will be all right. Popping bugs seem to be the most easily damaged and one of the most difficult to repair. The corks can be repainted, but if parts are missing it's best to salvage the hook and start over. Spinners and spoons of quality usually can be shined and polished with silver polish. Steel wool may damage the finish but often is necessary to remove bad tarnishes. Auto cleaner loosens much of the dull finish.



Steam from the teakettle will revive your matted flies.

Nylon or silk leaders that are over two years old should be tested for strength at the knots. Any material will weaken at these locations after a year or so. It is a simple matter to re-tie the loops and knots to restore the leaders to original strength. The best plan is to start with new, fresh, leader material since it is so inexpensive and may mean the saving of a good fish. Tightly coiled leaders stored for some time may be straightened by pulling them through a piece of inner tube or a soft rubber eraser.

Fly lines that were cleaned and coiled loosely and stored in a cool place will need only a good coating of line dressing to put them in readiness. Those lines left tightly coiled on fly reels may present a problem. Stretch them tightly and rub them vigorously with line dressing. Polish them several times and they may be like new. Bad breaks in the finish can be mended only by cutting out the damaged section and splicing the good parts together. This runs into a lot of work and the results are often disappointing. Nylon casting lines will be ready to go after old weakened knots have been retied.

Both fly reels and casting reels should be dismantled (make sure you know how to get them back together)

and cleaned. Dirt and sand accumulate in the lubricants and slow the action of the reel as well as cause excessive wear. After the reel is cleaned, new oil (or light grease if you prefer) should be placed on the gears, level wind, and end bearings. A well lubricated reel makes fishing much easier than a dirty, poorly kept one. Never lay a reel on the ground or subject it to dust.

Check rod guides, replace worn ones, clean up the handle and revarnish the chipped spots on bamboo rods. Glass rods take practically no care, steel ones need only touching up with enamel and even bamboo sticks seldom need a complete varnish job. It's best to let an expert handle a complete overhaul of a good bamboo rod. Paste floor wax used over the entire stick works nicely in shielding it from water and wear. A good case, either fiber or aluminum, will help protect fishing rods from much abuse. Care should be taken in drying bamboo rods before storing them in an air-tight case. Intense heat ruins more rods than big fish do.

Inspection of every article in the tackle box will put you in shape to head for your favorite fishing spot. Do your repair work and replace tackle early for more pleasant fishing hours.

With the "work" of fishing done, let's hit the high spots of angling angles for early spring. With any luck, April and May can be the best of the season's fishing. Weather plays an important role in deciding success or failure. Warm days after a series of clear, even-tempered days seem best. Any sudden changes in the weather may hurt fishing materially in spring. What about the moon phases in fishing? You might as well ask which is the best type of 'coon hound or shotgun. Everyone seems to have his own opinion. If you can fish every day or so, you are bound to hit the peak fishing. Indications are that during the spawning season, the full moon period may be the best fishing time. We *can* say that several factors such as water temperature, strong winds, food conditions and such, have more influence on fishing than do moon phases.

In the Piedmont, bluegills spawn quite heavily during May, and even the warm days of April will have those sunfish on the nests. The southern and eastern portions of the State will have a much earlier spawning time than the northern and western parts. The peak spawning periods are by far the best fishing times. Bluegills ordinarily congregate in large numbers around suitable spawning grounds. The larger fish usually are found in deeper water than the smaller ones. Four to five foot depths around submerged logs and trees may be very productive. One of the best flies throughout the spring and early summer is a wet fly or nymph fished deep and slowly. Surface lures are far down the list of consistent fish producers before June 1.

Crappies are among the earliest of spawners in fresh

Bream on a spawning bed.

water and are preceded only by yellow perch and walleyes. Look for schools of this speckled delicacy around brush or logs in from three to six feet of water. One of the secrets to good catches of crappies is a slowly retrieved lure. A small white streamer (without a spinner) or a minnow about two inches long will take them as well as anything. The same submerged log or tree root may have as many as a dozen crappies spawning very near it. Work each location carefully and watch for the tell-tale flash behind the lure. Patience is the by-word on crappies.

Bass are often heavy spring feeders, but spawning may have an adverse effect on fishing rather than helping it. Although many bass are caught during the spawning period, most of them are small or medium sized males, spawned-out females, or female fish that strike the lure in a protective sense rather than from hunger. Bass fishing should be fair to good just prior to the peak of spawning and very good immediately after. Small baits seem best with spinners and spoons are quite effective. For the fly rod angler, the sponge rubber bug with the rubber legs may take some large spring time bass. This bug should be somewhat larger than the one used on bluegills. Even a number 4 is all right. The spinning rod is a fine tool for early bass (all year 'round, for that matter).

Spring fishing calls for fishing deep in the forenoon hours and perhaps shallow in the afternoon. Warm, calm days, during the full moon (or in the dark of the moon?) are best. All fish hit better in the spring, so go fishing often. The fly rod is best, spinning tackle fine, cane pole and worms good and the casting rod all right. Fish carefully and slowly and you will discover the best fishing of the year.

Of more than 6,000.000 people living on the watersheds of North Carolina rivers, five millions must drink treated water because of pollution.

SCHOOL PAGE

CONDUCTED BY LUNETTE BARBER

☆ DOING TO LEARN ☆

by H. D. Isenburg

Principal Wiley School
Salisbury, North Carolina

These school youngsters are helping to beautify their school ground by planting trees. Does your school yard need more beauty—and shade?

Six hundred and fifty children to an acre! That's the problem that faced the Wiley School of Salisbury just ten years ago.—One acre of playing space, chain-linked and barbed wired to the back of the building, shared every day by more than twenty classrooms.

Now, some ten years and seventy thousand dollars later, we are completing a grounds expansion program. To add three acres to the school ground, the Board of Trustees purchased seven vacant lots that were 300 feet from the playground. This was pressed into service as a playing field. Then, as funds became available, six dwellings were purchased and were demolished or moved. A street still separated this property from the school grounds. The Board of Trustees and the City Council made a trade that relocated the street to the other side of the school, thus making a play area of some four acres.

School Trustees are generally hard-headed business men, so from the very start the wheels were kept rolling in planning and justifying every square foot of the "promised land." Much credit for the inspiration that steered this project must go to Dr. Richard L. Weaver, then of the Resource-Use Commission. Groups of teachers, students, parents and trustees considered every suggestion in light of the objectives of the total school program and the optimal use of the existing natural terrain. Finally as the last house was razed, a sketch was sent to the landscape architect, R. D. Tillson, to lay out a workable area that incorporated all the features that we required.

It is natural that the primary consideration would center around the physical education program. The main playing field is large enough to accommodate four softball practice fields, or two football or soccer fields, according to season. Also included are two smaller fields, for primary and grammar grade children. A hard surfaced multiple-purpose area, a clay court, and horseshoe pits are planned for the physical education and recreation areas.

But we intend to strengthen other areas of our curriculum through the use of the new grounds. Using a natural slope, an amphitheatre (large enough to accommodate 200 students) has been graded out and sodded. The backdrop will be a brick wall which, on the reverse side, will contain a fireplace. This fireplace stands at the head of a grove of trees that will serve as a picnic grounds. Water and electricity have been supplied to both areas.

One section, 40 x 120, has been set aside for gardening projects for the primary grades. It is our hope that, in addition to bulb gardens and vegetable patches, there will be a section of garden devoted to the rooting of shrubbery. Some fifteen varieties of shrubs will eventually be added to the ones already on the grounds.

The project that is attracting the most attention at present is the planting of an arboretum. Already on the grounds we have many varieties of trees, including three species of maples, two species of cherry, box elders, elms, hickory, walnut, persimmon, mimosa, true cedar, holly, dogwood, hemlock, and gum trees. This year the Parent-Teacher Assocation has underwritten the expense of planting 66 more trees that will include

•——————————See SCHOOL Page 23

FROM THE GOVERNOR'S OFFICE

NATIONAL WILDLIFE WEEK

Governor William B. Umstead Designates March 21-27 As National Wildlife Week In North Carolina

Governor William B. Umstead

"I understand that the week of March 21-27 will be observed throughout our Nation as National Wildlife Week. The designation of this week for this purpose was instituted a number of years ago by the National Wildlife Federation to emphasize the need for using wisely the natural resources of our country. Soils, forests, waters and wildlife are vital natural resources which we must conserve and renew as a heritage to our children and their children throughout the years. We have made much progress in our conservation efforts but much remains to be done. The drought in North Carolina last year made us realize more keenly the incalculable value of water as a natural resource for our farms, for our towns and cities, for our industries and for all our people.

"The theme of National Wildlife Week this year is centered about the problem of water pollution and what to do about this problem. Our forests are of tremendous and increasing value. The soil on our nearly 300,000 farms is probably our greatest single resource. It has been estimated that at least one hundred million dollars in income results from our wildlife resources in hunting and fishing alone. No one can place a price on the esthetic value of wildlife alone. All of these resources, however, would be worthless without water.

"North Carolina is a leader in industrial development in the South and we are making a determined effort to attract new industries, as well as encourage our present industries to expand, and thereby increase the per capita wealth of our State. However, industry, like plants and animals, cannot exist without an abundance of pure water.

"Continued misuse of our water supply will curtail our industrial development, deplete our soil, spoil much of our outdoor recreation and may actually endanger our health.

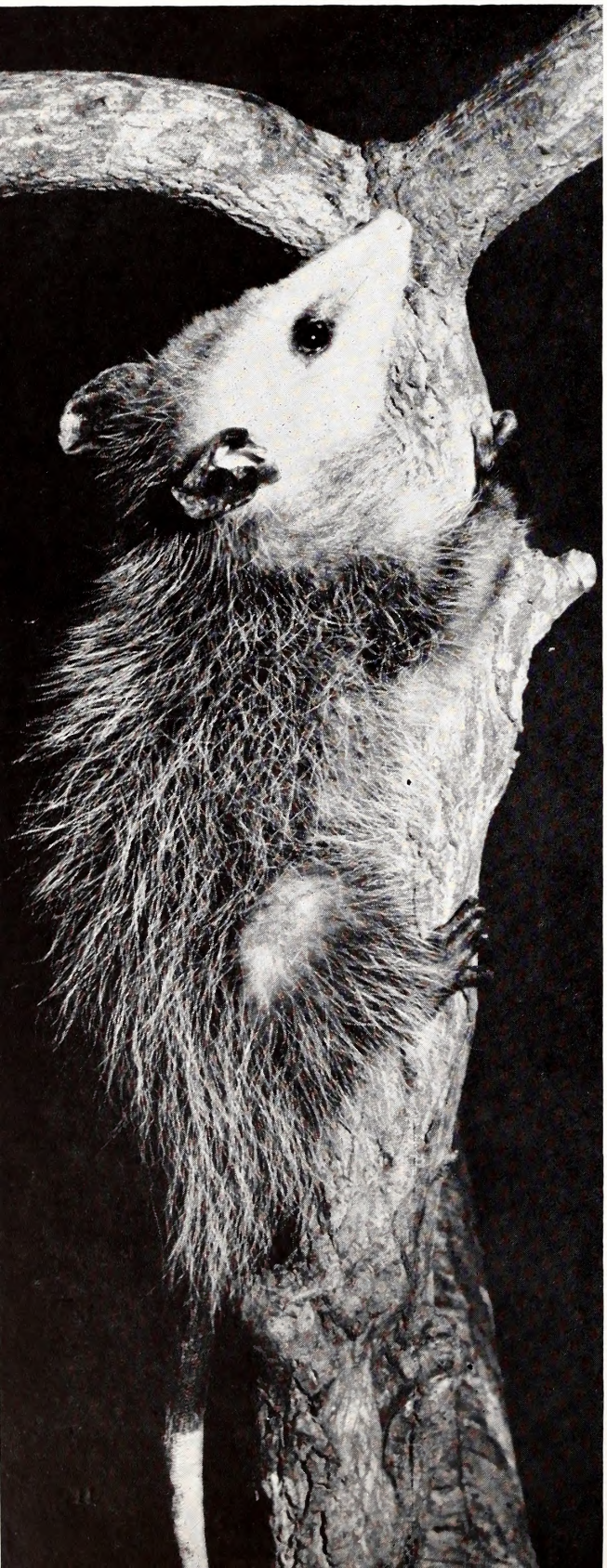
"In view of the importance of this matter to our State, I am happy to hereby designate March 21-27 as National Wildlife Week in North Carolina. It is my hope that during this period our people will learn more about the need for conserving our soils, our forests, our wildlife and especially our water."

William B. Umstead
Governor of North Carolina

WILDLIFE— *A Heritage Worth Safeguarding*

The annual wildlife harvest in North Carolina can be given an economic value of approximately $100,000,000. The esthetic and recreational value of our wildlife is of even greater value to most of us. An abundance of wildlife is indicative of a progressive people—a people who, in safeguarding their for the soil, mother of all life! We, as citiz an effort to provide a more favorable home f

Photo by Jack Dermid



The droll appearance and curious behavior of the opossum has captured the interest of many observers. "Mr. Possum" is assured a permanent position in variety of foods and habitat, but other species are not so fortunate.

These birds were not killed for food. Their wanton destruction is a loss to natural beauty and to the balance of nature. (Three kingfishers, a grebe, and an owl.)

ritage, have the proper respect
t Carolina, must join hands in
our blessings are to continue.

Fish and Wildlife Photo by Peter Van Hatzen

er of migratory waterfowl can be
n Carolina coastal waters during the
hs. Abundance of these birds in
na is dependent upon a restricted
son and a stable supply of clean
duce food.

OBITUARY

These "finny" battlers will never put stars in the eyes of some barefoot boy. The juvenile (and adult) vision of coming home with a full "string" is seriously endangered by pollution of our streams with silt, industrial waste, and raw sewage.

irrel is one of North Carolina's most popular game ani-
tion of its habitat and out-of-season shooting reduce the
ch year.

Photo by Jack Dermid

Deer will be present in prolific abundance when food and cover conditions permit. The hunter's harvest keeps deer from becoming too numerous and destroying their food supply.

Fish and Wildlife Service Photo by E. P. Haddon

How Fish Develop

by J. H. Cornell

The development of a fish, like any other vertebrate animal, follows the fertilization of an egg by a sperm. Nature provides three basic methods for the development of eggs into new animals, and all three are followed by fish.

The first method, internal fertilization and internal development, is that followed by the mammals, such as a cow, for example. The egg is extremely small, and when it is fertilized it develops within the body of the female. The new individual receives its nourishment from the blood stream of the parent, through the walls of the blood vessels into the blood stream of the embryo. The new individual is highly developed before it ever sees the light of day.

The second method, internal fertilization and external development, is the method used by the reptiles and birds. Fertilization of the egg takes place internally just as it did in the first method. However, the egg is released from the ovary, fertilized, and begins development within the female's body. In this method, however, there is no source of nourishment for the new individual except from that stored in the egg itself. The food materials are stored in the yolk of the egg. When this method of development is followed by an animal, it is obvious that the egg must be much larger to provide the new individual with an adequate food supply during the early period of development. The development of a baby chick is a common example of this method.

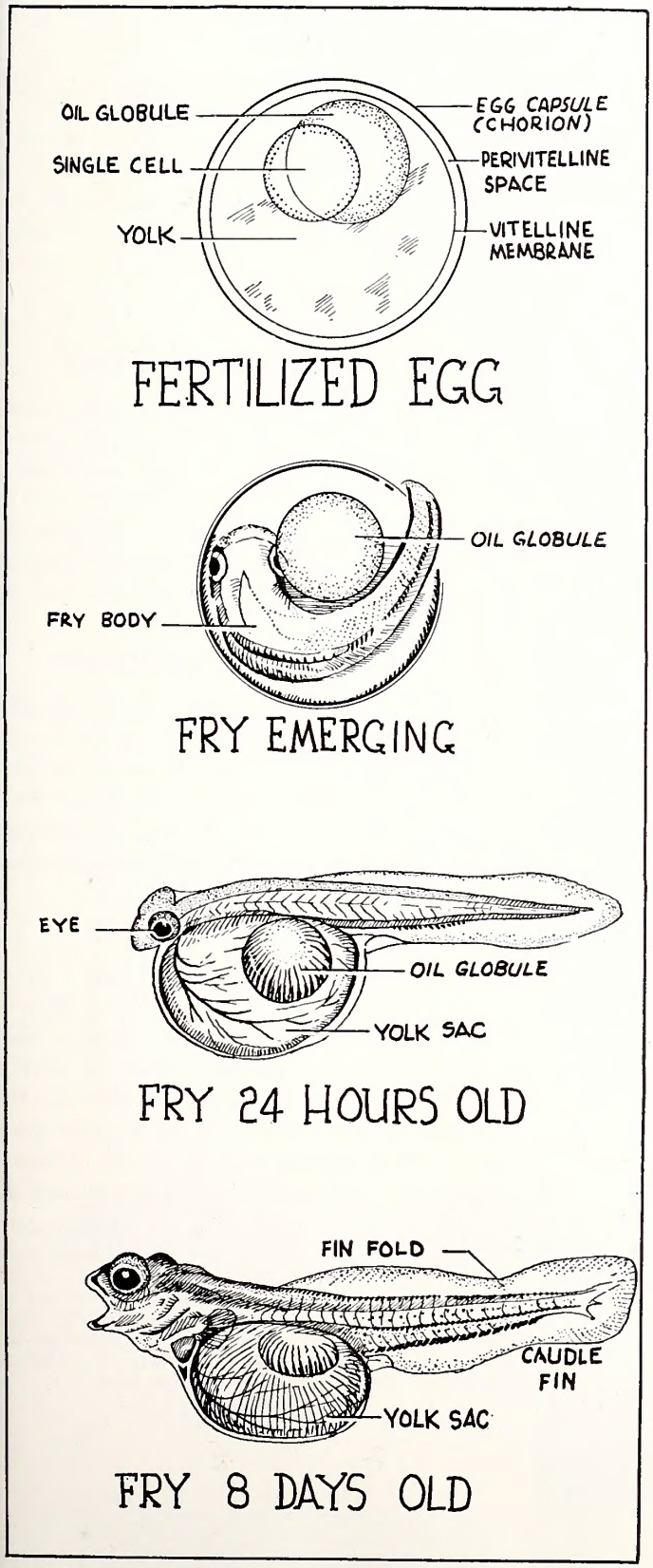
The third method is external fertilization an external development. In this case the eggs are released by the female parent without previous fertilization. The sperms are released by the male parent at the same time. Since the egg is incapable of movement, but since the sperm is equipped with a tail for swimming, this method can be followed by animals that live in the water. It is by far the most common method among the fishes. In this case too, the new individual receives no nourishment except that contained in the egg, and consequently the eggs are relatively large.

Actually, there are examples of all three methods of fertilization and early development among the fishes. The first method is followed by some of the sharks. The second method, somewhat modified, is followed by many of the so-called "livebearers," as the mosquito fish or Gambusia, for example. Although the young of the Gambusia are actually born alive, this is a modification of the second method which consisted of internal fertilization and external development. There is no connection between the new individuals developing in the eggs and the body of the female parent. The development is actually external to her tissues, and the eggs are simply retained within the body cavity during the early period of development. It is very similar to the situation of a hen sitting on a nest of eggs to keep them warm during the incubation period. Nearly all of the fish, however, follow the third method. Among some species there is an actual pairing of the fish, wherein one male and one female produce a family of youngsters. In other cases there are large groups of a species gathered together, wherein the reproductive products are released simultaneously and the fertilization of any egg is purely a matter of chance. Some of the fishes build elaborate nests and provide considerable parental care during the development period, while others simply broadcast the eggs free in the water at the time of fertilization, and leave them to the whims of nature.

Let's take a look at the newly laid and fertilized egg of a smallmouth bass and see how the individual develops. The egg is about one-tenth of an inch in diameter, and is adhesive so that it will stick to the gravel of the bass nest. The nuclear material of the sperm and egg fuse to form a single cell. Most of the space within the egg, though, is the yolk material. This is surrounded by a membrane called the vitelline membrane, then by a layer of water which has been absorbed through the chorion of the egg capsule. (See Cut). This single cell divides into two, then into four, eight, sixteen, and so on, until a mass of tissue is formed. In each egg there is a yellow oil droplet that is lighter than the rest of the egg and lies near the uppermost part of the transparent yolk. The embryonic bass develops from this tissue of cells on the upper side of the yolk above the oil globule. As the cells continue to divide, the tissue becomes differentiated so that the eyes, heart, brain, body cavity and spinal cord can be recognized. This new individual is still within the egg capsule, and is very much smaller than the yolk sac. As the embryo develops, the food material in the yolk sac is slowly absorbed, and the developing fish becomes larger as the yolk becomes smaller.

After some three or four days the bass has reached a size of about one-fifth of an inch and is curled inside the shell around the yolk sac. At that stage it hatches out of the egg membrane and straightens out into a fish form, still with the yolk sac attached, but free from the egg capsule. At this stage of development the fins are a continuous fold of skin. The dorsal fin, anal fin, and tail fin are all connected until the fin

rays develop and assume the form in which the fisherman recognizes them. Of the paired fins, the pectorals first develop as small folds of skin just behind the head region. The pelvic fins are not formed until the yolk sac has been nearly absorbed. The rays in these fins develop soon after. Within a day after hatching, the eye becomes dark as the pigment is formed, and soon afterward dark spots form on the body itself.



As the young fish develop and absorb the food supply, they make better and better efforts at swimming, although the weight of the yolk sac continues to take them back downward to the nest. Depending on the temperature of the water, which governs the speed of development, the young smallmouth will rise from the nest in one to two weeks after the eggs are deposited. At that time they are entirely black, unlike the largemouth fry which are nearly transparent at that stage of life. As soon as the yolk sac is absorbed, the fry begin to feed on the microscopically small animals in the water and grow rapidly. The body soon assumes the shape of the adult, and the fins become entirely separated from each other. Scales begin to develop on the young fish before they are an inch long.

In addition to the color, there is another major difference between the largemouth and smallmouth bass at this stage in their existence. When the young smallmouth bass are sufficiently developed to begin swimming and can leave the nest, they scatter to all parts of the water and there is little evidence of schooling or parental care beyond that point. The largemouth fry, on the other hand, leave the nest in a group and remain in a school for several days afterward. The male parent guards this school and apparently makes some attempt to keep them herded together so that he can protect them better.

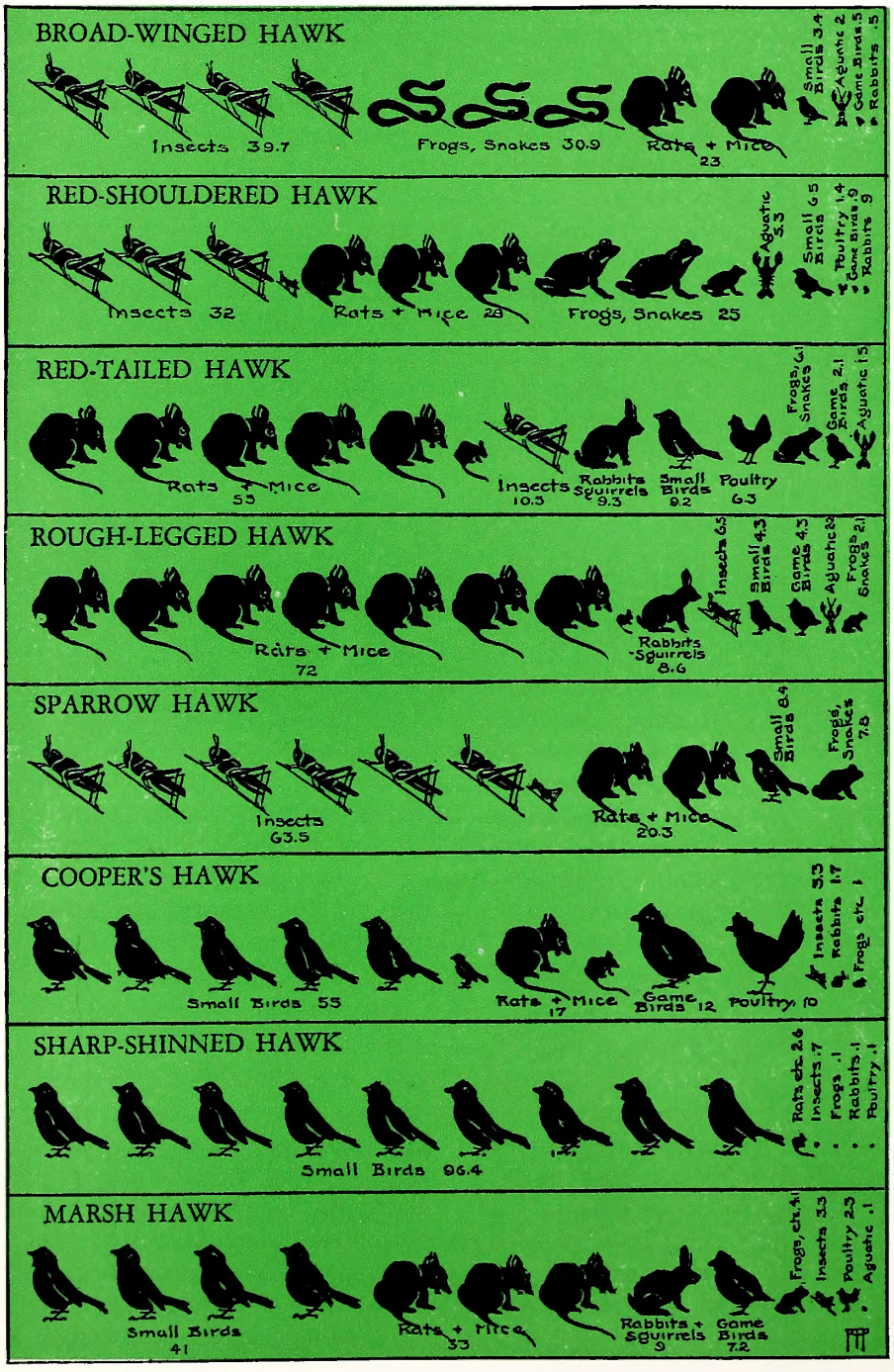
Actually, the greatest hazards to the survival of a bass occur during the embryonic period. Water fluctuations may expose the nest to air and cause the death of all the eggs. A temperature change of as much as 11 or 12 degrees can kill every embryo before it has a chance to hatch. In spite of the best efforts of the male bass to guard the eggs, some predators succeed in rading the nest and eating the eggs. A sudden storm on the watershed may wash quantities of silt into the water and deposit a layer of mud over the eggs. This will promptly suffocate them. Pollution at this time is especially serious. Fingerlings and adults can withstand considerable temperature changes and some amounts of pollution, but the embryos are particularly susceptible to any toxic substances in the water.

Among the cold water fishes, such as trout, the eggs develop over a much longer period of time. Since those eggs are characteristically buried in gravel in extremely cold spring water, the development period of the embryos is much more extensive. However, the same general method of development exists, and the young individuals are supplied with food by the attached yolk sac. As it disappears by absorption, they must learn to feed on the materials and organisms in the water near them. They can swim in pursuit of food at that stage of development, but many are lost because they failed to learn to use their mouths in feeding themselves after the absorption of the yolk sac.

•——————See FISH Page 18

THIS view of dead hawks strung on a wire fence is seen too often. It means that some people kill hawks without realizing that most of them are now protected by law in all but a few states. Why hawks are protected will be understood better after you study the diagram below. It is based on studies by the U. S. Department of Agriculture of 5,185 hawk stomachs.

WHAT HAWKS EAT



'LIVING MOUSETRAPS'

The hawks most commonly shot, such as the red tails on the fence, are the ones that soar in wide circles in the sky and perch conspicuously in the open. These are the hawks that feed mostly on insects and rodents — that's why they are often called "living mousetraps."

A JOB FOR EVERY HAWK

The small creatures that hawks eat breed so rapidly that *there is an important job for every hawk to do.* If rats, mice, rabbits, squirrels, and gophers are not controlled by hawks, owls and other predators, they sometimes do extensive damage to agriculture. There can be no doubt that hawks have great value to the farmer and the land alike.

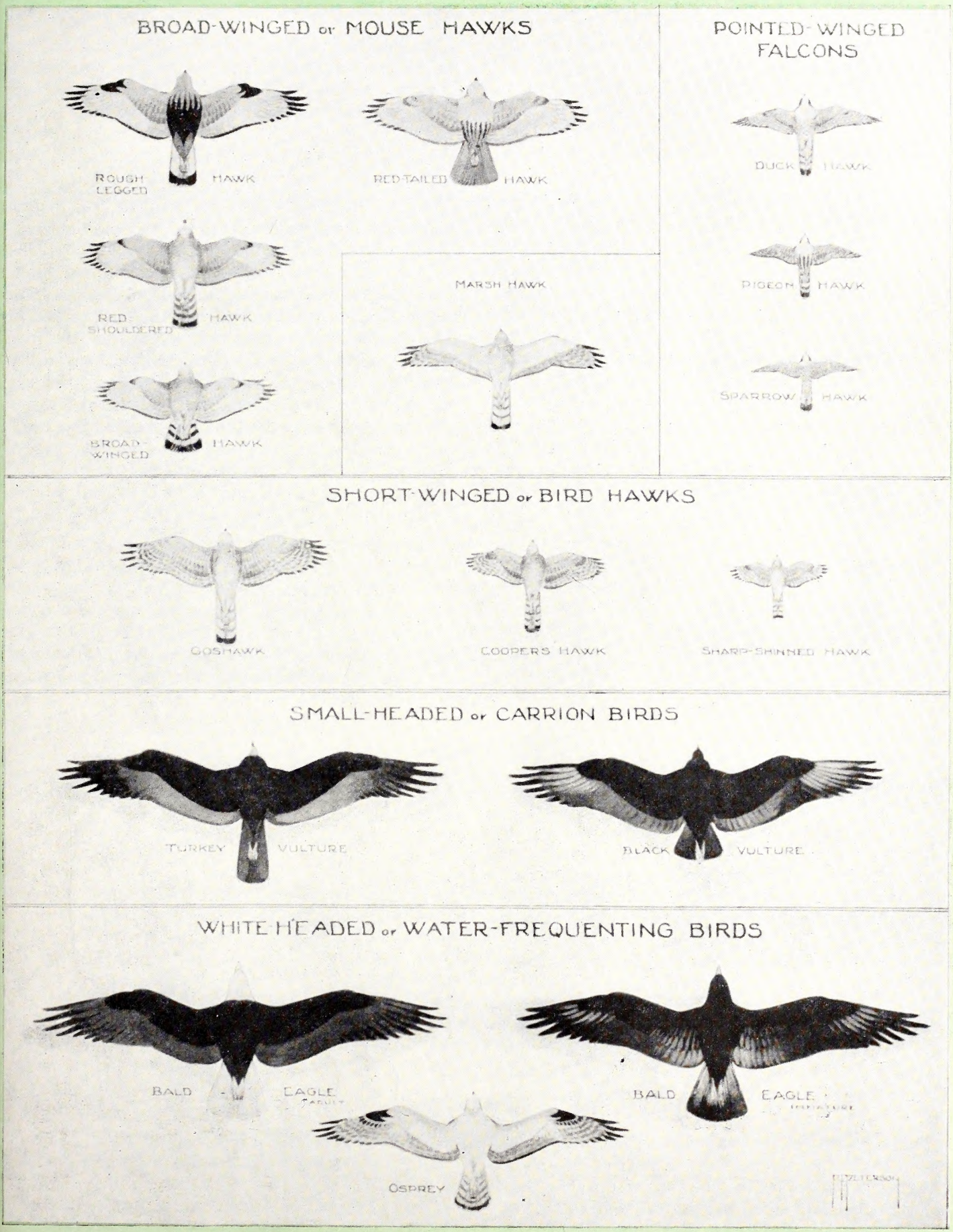
THE WILDLIFE COMMUNITY

The smaller long-tailed hawks that feed mostly on small birds are not seen very often because they do not soar in circles and usually perch under cover. The eating of small birds by hawks is nature's way of controlling their numbers so as to maintain a balanced and therefore healthy wildlife community.

KNOW YOUR HAWKS

Learn to identify the various hawks in your vicinity and observe their food habits. A Minnesota farmer reported to the National Audubon Society that, in one day, he watched a red-tailed hawk capture 32 mice that were turned up while he disked his field. He added that *all* hawks and owls are protected on his property, not just in view of their economic value but because he enjoys watching them.

This circular was prepared by the National Audubon Society, 1130 Fifth Avenue, New York 28, N. Y. For detailed about hawk and owl protective laws in the various states, send 10¢ to the Society for the bulletin, "A Fair Deal for Our Birds of Prey?" Appreciation is extended to the Missouri Conservation Commission and C. W. Schwartz for use of the drawing at the top of this page.


BROAD-WINGED or MOUSE HAWKS
ROUGH-LEGGED HAWK
RED-TAILED HAWK
RED-SHOULDERED HAWK
BROAD-WINGED HAWK
MARSH HAWK
POINTED-WINGED FALCONS
DUCK HAWK
PIGEON HAWK
SPARROW HAWK
SHORT-WINGED or BIRD HAWKS
GOSHAWK
COOPER'S HAWK
SHARP-SHINNED HAWK
SMALL-HEADED or CARRION BIRDS
TURKEY VULTURE
BLACK VULTURE
WHITE-HEADED or WATER-FREQUENTING BIRDS
BALD EAGLE
BALD EAGLE
OSPREY

FISH

from page 15

The free-spawning fish, such as the striped bass, develop as the eggs drift along in the current of some turbulent river. They receive their oxygen supply, and are kept from being covered with silt, by the fact that during the embryonic period the egg is not in a nest but is rolling along the river bottom in the current. Depending upon the speed of the current, a new individual may be many miles from the point where the egg was laid when he finally hatches out and begins to swim and feed.

It is at this stage in life that there is found the greatest competition for food among all the fishes which may inhabit a body of water. The young of all species feed on the plankton materials, either animal or vegetable, which may be in the habitat. After a short period of development, though, the characteristic food preferences of the various species begin to assert themselves. For example, when the largemouth bass reaches a size of about 2 to 2½ inches, he ceases being an insect feeder to some extent, and begins feeding on very small fish if they are available. This characteristic makes it possible for the young bass to feed extensively on young sunfish which spawn slightly later than the bass.

The striped bass is much more voracious. Even at a length of less than an inch the young fish will attempt to eat each other. In an aquarium it is not unusual to see chains of four or five striped bass fry each attempting to swallow another one tail first. In these cases the first fish may be caught by the tail but may be too large to be swallowed, and while the second fish is attempting to swallow the first, still a third may attempt to swallow the second one. Chains of several fish are not at all unusual in situations where adequate food is not available for them at a very early age.

The rate of development among fishes depends on the food supply. Warm-blooded animals, such as the mammals, start out in life with their ultimate size predetermined by their inherited genetic structure. If they do not have enough food to reach this size, they die of starvation. When they reach their predetermined size, no further growth takes place except, possibly, additional weight. Among the cold-blooded animals, however, growth goes on all during the life of the individual so long as the food supply is adequate. On the other hand, at any stage in its life a fish can stop growing because the food supply is insufficient, and can maintain itself with a minimum supply of food without having enough for further development in size.

This accounts for the tremendous number of small fish in some waters, where the number of fish is too great for any one individual to grow up. The most rapid growth rates take place in new bodies of water, such as new impoundments, where the fish stocked, either from a hatchery or from natural sources, have an almost unlimited supply of food. Here there is little loss through predation or starvation, and extremely rapid growth results.

Another limiting factor on the growth and development rate among fishes is the water temperature. Each fish has a critical temperature below which it does not have the ability to digest and assimilate food regardless of its abundance. This means that in northern waters, the growth rate of fishes is generally lower than for similar species farther south.

In the largemouth bass, for example, the critical metabolism temperature is in the vicinity of 55 degrees. During all that part of the year when a body of water is below that temperature, the bass will not grow. Development ceases during the winter months. The extent of seasonal differences determines the speed of development in different waters, even when the food supply is similar. It is this interruption of growth in winter that is shown in fish scales. It permits the age of a fish to be detrmined by scale inspection. The material of which the scales are composed shows a break in the growth rings during the period when no growth is taking place. It is on this basis that the age, and consequently the rate of growth, of individual fish can be determined.

All these factors affect the development of fish: those which may be lethal in the embryonic stage, those which may prevent development in the fingerling stages, and those which may prevent normal development later in life. It is fortunate, indeed, that the reproductive potential of fish is so great. Otherwise, the large fish, which the fisherman considers a prize, would be scarce indeed.

"NOW, MAY I SUGGEST A PLACE?"

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Patton Elected Chairman Atlantic Waterfowl Council

At a meeting in Wilmington, Delaware recently, Clyde P. Patton, Executive Director of the Wildlife Resources Commission was elected chairman of the 17-state Atlantic Waterfowl Flyway Council. Stewart Critcher, Coordinator of Federal Aid to Wildlife Projects for the Commission was elected Secretary. The Council is one of four groups organized in each of the four major waterfowl flyways to coordinate activities between the various states and the U. S. Fish and Wildlife Service in waterfowl management. At the Delaware meeting problems in winter waterfowl census were discussed, together with other techniques of waterfowl management.

* * * *

Lists of Designated Public Mountain Trout Streams Ready

Trout fishermen who will this year be required to buy a special trout fishing license costing one dollar may get a list of the streams on which such a license will be required by dropping a line to the Wildlife Resources Commission, Box 2919, Raleigh. The April issue of WILDLIFE will run a story on the applications of the trout license law, plus an outline of using funds from the license for a stepped up trout production and management program.

* * * *

March 19 is National Arbor Day

March 19 is Arbor Day throughout the United States. The day is set aside to give special attention to the planting of trees for beauty and for practical use. Schools throughout North Carolina will be urged to plant trees on the school ground to provide shade and beauty, and to teach the value of trees.

* * * *

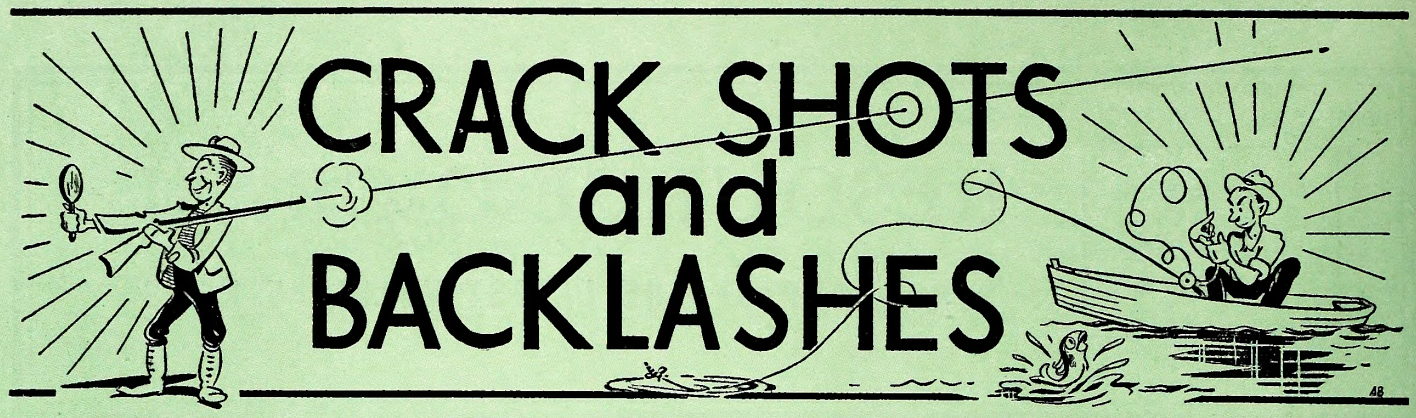
Tobacco Farmers Urged to Eliminate Bluebird Booby Traps

During late winter and early spring thousands of bluebirds are killed each year in North Carolina tobacco barns. The birds, looking for shelter or nesting sites, go down tobacco barn chimneys and become trapped in the new type oil or gas burning tobacco burners. The destruction of valuable insect-eating bluebirds can easily be prevented by putting wire screen at the chimney entrance or opening the burners so that trapped birds may escape to fly out the roof ventilator or through barn doors left ajar.

* * * *

Wildlife Commission to Operate Weldon Striped Bass Hatchery

Plans and developments are already under way to again operate the only striped bass hatchery in the world, located at Weldon. By the time the bass spawning run begins the hatchery will be ready to purchase and hatch eggs from fish brought in by sport and commercial striped bass fishermen. Eggs from a large spawner may be worth as much as $20.00 to a lucky angler.



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

With the month of March come strong winds (which seem to have been blowing all winter) and a strong urge among urchins to get out marbles and kites. Their dads sample the first warm breeze and start to give their tackle boxes, which nine times out of ten are in the same shape they were in when last used last fall, a thorough going over. March is a month of spring fever and fishing fever, maladies which are incurable except by sleeping or fishing or both.

We have come through a comparatively severe winter, and although March can deal out some extremely nasty weather, Spring will be ushered in with the vernal equinox. Most important event of the month to wildlifers is the week of 21-27 which has been designated as National Wildlife Week.

For a number of years National Wildlife Week has been sponsored by the National Wildlife Federation on a nationwide basis, and governors of the various states have proclaimed or designated the week at the state level. This year the theme of the week is stream pollution. In past years the Week has been devoted to such projects as saving trumpeter swans, Florida Key deer, and prairie chickens. For the first time a theme has been chosen which is of deep significance to every citizen of every state in the nation. Stream pollution, whether from civic or industrial waste, or from soil erosion, is not a problem particular to sportsmen. It is a matter of public wealth and public welfare. At long last pure, clean water has become recognized by industry and government as a vital national natural resource.

Very frequently the Wildlife Resources Commission is called on to take positive action in the matter of stream pollution. The following letter from Clegg L. Thomas, Marshville, is an example, and Fish Division Chief Harry Cornell's reply makes clear the Commission's position:

Dear Sir:

I want to ask you some questions concerning the fish in Rocky River. I have been living on Rocky River for twenty-five years and all there has been in it was carp, cats, and suckers. For the past two or three years there has been a lot of bass seen so I tried it with a fly rod and have caught some that weighed as much as three pounds. The thing I want to ask is this, why does the Wildlife Commission of North Carolina let the mills in Concord and Kannapolis dump this dye in it? I live 30 miles from Concord but you can't even stay on the river now for rotten fish. They say you can see a hundred dead in one place. If we want to go and catch one with a net to eat we would probably get caught and fined from $10 to $20, but still you will let them kill more at one time than we could catch in a lifetime. I think it is about time for you to do something about them dumping these chemicals in the water. I worked for two years in the dye dept. in the Grace Bleaching in Lancaster, S. C. but that dye did not kill the fish. So why can't you do something for this? If the dye was kept out of Rocky River it would make one of the best bass streams in North Carolina. The reason I am writing this is because I love fishing as good as anyone in the State but I do hate to see all the fish killed by one big company. If it will not take too much of your time I want you to write me and answer these questions for me.

Dear Mr. Thomas:

This is in reply to your recent letter concerning the pollution of North Carolina streams and the numbers of fish that are killed by such pollution. We agree with you entirely that it is most desirable to clean up the surface waters of North Carolina.

The Act which created the Wildlife Resources Commission specifically prohibited this Commission from having anything to do with pollution abatement. This important task was assigned by the Legislature to the Stream Sanitation Committee of the North Carolina Department of Public Health. That agency is doing everything in its power to provide the most practical and desirable uses for the surface water of the State. Its activities are limited only by the procedures established by State law for the cleaning up of the streams, and by the amount of money made available for it to work with.

The loss of the fishery resources in polluted streams is a serious loss to the people of the State. However, we feel that the menace to public health which may result from pollution is a much more serious consideration to our people. The existing situation will be improved if and when the people of the State like yourself, who are interested in making our State a better place in which to live, see to it that the necessary laws and monies are made available to carry out an adequate pollution abatement program.

Very truly yours,

J. H. Cornell

Chief, Fish Division

All the way from Olympia, Washington comes this suggestion from Mrs. Ruby Ayer, who renews her subscription for another two years, and takes up the cudgel for farmers:

"Yes, I enjoy WILDLIFE IN NORTH CAROLINA. Would it not be better to convey to the readers that one of the greatest sportsmen or sportswomen, or greatest, both in numbers and in sportsmanship, is the farmer—even if he should never carry a rod or a gun.

"The phrase 'so what?' hurts a serious minded farmer, as this is the term used in our State of Washington quite loosely by both so-called sportsmen and in some instances by law enforcement agents when land owners object to some rules and regulations set up by our law makers at the insistance of our Game Commission and Department of Game.

"We (farmers) can and do produce game and fish; we do know how, but we are frowned upon when we express our views about control, harvest, and general management of the game we produce.

"I agree with Ed Zern, and I do believe we should be concerned about the distant future. We land owners can do something about it even if we have to use force to protect our property. The majority of hunters that have trespassed on our 640 acres are game hogs and I can prove it. I can also prove this point in respect to hunters trespassing in their attempt to take remaining deer in a second year hunters' choice area in this state. Our Game Department encourages such hunting."

Apparently Washington, too, has the farmer-sportsmen problem. Admittedly, farmers produce most of our game. Sportsmen, out of gratitude, could at least express their appreciation by living up to the meaning of the word "sportsman." A "hunters' choice" hunt is one in which deer of all ages and both sexes may be taken legally when it is desirable to reduce deer populations in a given area.

This letter from Dr. D. E. Ford of Washington, N. C. might stimulate our readers to make the U. S. Information Service (to preach democracy in foreign countries) a little more effective. We don't think of WILDLIFE as being especially anti-communist, but a magazine of this type cannot exist in other than a Democracy. If it can in some small way be an influence against communism, Dr. Ford's suggestion is proudly passed along:

Dear Editor:

I wonder how many of your readers send WILDLIFE to friends or schools in foreign lands. For about seven years I have been sending ours with scores of other magazines, every month, to a friend in Hong Kong who passes them along to the Y.W.C.A. reading room! And that is a suggestion—people really enjoy our beautiful foreign magazines.

Crow shooting comes up frequently on these pages. Here is a letter of inquiry from Tommy H. Gordon, High Point:

Dear Sirs:

I would appreciate it very much if you would please send me information on hunting the crow. Can the crow be hunted in summer? They certainly ruin my grandfather's corn at the edge of the woods and even farther out. Please tell me what is the best time of day to hunt them and where is the best place. There are usually some around the river (Deep River) behind my house.

P.S. Tell me which is the best to use, a shotgun or a rifle. I can use my 20-gauge shotgun or my Winchester 62. Also tell me what kind of weather is best.

It is permissible to hunt crows any time of the year as long as license requirements are met. You could probably kill more crows with a shotgun than with a rifle if you conceal yourself in thick cover, and call in the birds or decoy them with crow decoys.

Perhaps some of our crow-shooting readers can give you further advice. Many are really expert at the sport.

The picture is proof.

WILDLIFE rarely uses "dead fish" pictures unless there is an unusual angle attached. The average fifteen-year-old considers himself lucky to get asked out on a fishing trip by an adult, luckier still if he brings a mess of bream to creel. Billy Johnson of Raleigh is in the big game angler class by virtue of a six-foot eight-inch sailfish he caught last summer off Ft. Lauderdale, Florida. That is real luck and real tackle handling.

•——————See CRACKSHOTS Page 22

PROTECTOR OF THE MONTH

Roland Koontz

Born in Jefferson, North Carolina, on July 31, 1917, Mr. Roland H. Koontz is a graduate of Jefferson High School. He has served as a Wildlife Protector for the past seven years, during which he has lost only one foot race with a game law violator. He attributes his sprinting success to the fact that he has never acquired the nicotine habit.

As the Ashe County Protector, Mr. Koontz has won the respect of both the landowners and the sportsmen. His greatest satisfaction comes from finding the hunter or fisherman right in every respect of the law, and with the realization of their true enjoyment of the sport.

Protection Division Record for December

Persons checked	31,967
Prosecutions	610
Convictions	523

A total of $6,009.10 in fines was collected and paid into the school funds of the counties in which the convictions were obtained. Fines were not collected, being either suspended or not levied, in 35 per cent of the total number of convictions.

It's the Law!

Question: How long may a person keep legally killed game in his possession after the end of the open season?

Answer: Under the law of this State, legally aequired game may be possessed for ten days after the end of the hunting season for the type of game concerned. Thereafter, such possession becomes illegal unless a written declaration of the number and kinds of game animals or birds in possession is filed with the Wildlife Protector in the county.

CRACKSHOTS AND BACKLASHES

from page 21

Billy fought the fish to a standstill in 35 minutes of rugged struggle. But he is luckier still to have a man like Russell E. Brown (left in cut) for a friend. Brown works for the State Health Department, and believes that kids ought to go fishing. He takes Billy on frequent trips, including the Florida trip where Billy caught the sail. Further, he had the fish mounted, and has presented it to the State Museum. Pending completion of the museum's new home in the new Agriculture Building in Raleigh, the beautifully mounted trophy hangs on the wall of WILDLIFE Editorial offices in Glenwood Village. It may not be the biggest sailfish in the world, but Billy thinks it is one of the best. We agree.

M. E. Dodge, Oakley, S. C. (formerly of Charlotte) we pass on for reader reaction:

Dear Editor:

Have you ever considered numbering the pages of WILDLIFE consecutively so that we can bind all of one year's issues in one volume? It would make a wonderful book!

Under present system each year gets a higher Roman numeral volume number, and the issues number from one through twelve during the year.

Bill Johnson, outdoor editor of the Rocky Mount Telegram comes forth with a commentary on the past hunting season. Dove Expert Stuart Critcher, of the W. R. Commission's game division, contends doves tend to concentrate on good feeding areas in the early fall season, scatter out over wider areas in midwinter season when cornfields are being prepared for spring planting, exposing plently of shelled corn. (Personally, we got skunked on the last day of the dove season.—Ed)

"Mr. Rod Amundson, Editor

Dear Sir:

With the second portion of the open season on doves coming to a close this Sunday, I thought you might have some use for a report on the shooting in this section during the past couple of weeks.

Those of us who will take dove hunting to just about any other type of outdoor activity have been just a bit disappointed. Reports from other hunters and personal experiences seem to indicate that the doves just aren't to be had in very large numbers—certainly not in the large numbers that were seen and bagged during the first part of the split season.

Several groups reported good shoots on opening day (December 28), but since then the birds have been few and far between. Even recognizing the fact that doves learn fast after being shot at a few times, the numbers have been slightly under par.

As far as other game is concerned, we're satisfied. Quail have been a bit more numerous in some sections, probably because of an increase in conservation measures on the part of farmers and wildlife club members in this area.

Squirrel and rabbit hunters say that hunting has been about the same as in past years, which around here is pretty good.

The one big change in the game situation down this way has been the increase in the number of deer spotted and bagged in Edgecombe county. We've known for a long time that deer were moving down this way out of Halifax and Martin counties, but this is about the first year they've been numerous enough to warrant large scale hunting.

Even a few deer have been seen in Nash county, but only in isolated instances. Maybe if we keep the season on deer closed in that county for a couple more years, we'll have some decent shooting right here on the doorsteps.

Hope you can find some use for these notes. If there's anything we can do for you here at the Telegram, just whistle and we'll come running."

SCHOOL

from page 10

19 additional species. A screen will be planted at the far end of the grounds that will include Canadian hemlock, red cedar, Norway spruce, American arborvitae, and white pine trees. One section will be planted in bicolor lespedeza and multi-flora rose, as an inducement to attract birds.

The picnic grounds will receive additional trees, including dogwoods, red buds and ginkgos. A row of American ash trees will be planted along the new street, and a row of moraine locusts will flank one side of the main playing field. Other trees that will be planted will include specimens of pin oak, Kentucky coffee tree, willow oak, Japanese pagoda, horse chestnut, American linden, American beech, plane tree, and Japanese flowering cherry. Most of the deciduous trees will be from ten to twelve feet tall when planted.

The students have taken a keen interest in the project, and most of the classes are sponsoring one or more trees. As an outgrowth of their science study, the children decided that they would like to purchase and assist in planting the tree of their choice. Naturally the age of the children determines the part which the class will play in helping the nurserymen with the actual planting. A number of parents, too, have volunteered to purchase a tree. Markers are being ordered that will give both the common and botanical names as well as the name of the tree's sponsors.

The new playground has already begun to pay dividends, in addition to the increased play area. Parents have engaged in the project with enthusiasm. The children have had a valuable educational experience in assisting with the tree planting, and every tree is assured the tender care that thirty pairs of watchful eyes might afford.

And a new idea has been born. Urban children have developed a greater appreciation for the inter-dependence of agriculture and industry. And urban children have gained a greater respect for the importance of reforestation, protection of wildlife, and conservation of our most valuable natural resource, the soil.

Explore Your Neighborhood

Backyard Conservation . . .

What Can I Do?

by Bill Hamnett

This is the month spring officially arrives. The warmth of the days quiets our memories of the hardship of a departed winter. The strength of sunlight is warming nature's storehouse and life is appearing renewed again. Spring fever afflicts many people, but as this is overcome, we often resolve to do things that create interest and provide enjoyment. Following are some suggestions which will help everyone to enjoy more the greatest assets of North Carolina—her natural resources.

Put up bird houses. From some of your children's books you find adequate plans for bird houses. Put these houses in a suitable sunny location at the height preferred by birds who will rent them.

Explore your neighborhood. Take more field trips to see birds. Keep a list of new birds seen and the date seen.

Look for wild mammals: field mice, rats, moles, squirrels, bats, rabbits, skunk, mink, opossum, beaver, fox, deer, etc. How many of these have you ever seen? Find out how many kinds live within a ten mile radius of your home?

Visit a stream or pond: look under stones, logs, and plant life for the variety of insect larvae, tiny fish, snails, clams, and pollywogs.

What kind of fish live in your area? Go fishing. Are the streams near you clean or polluted with refuse and sewage from some local factory, mill or town?

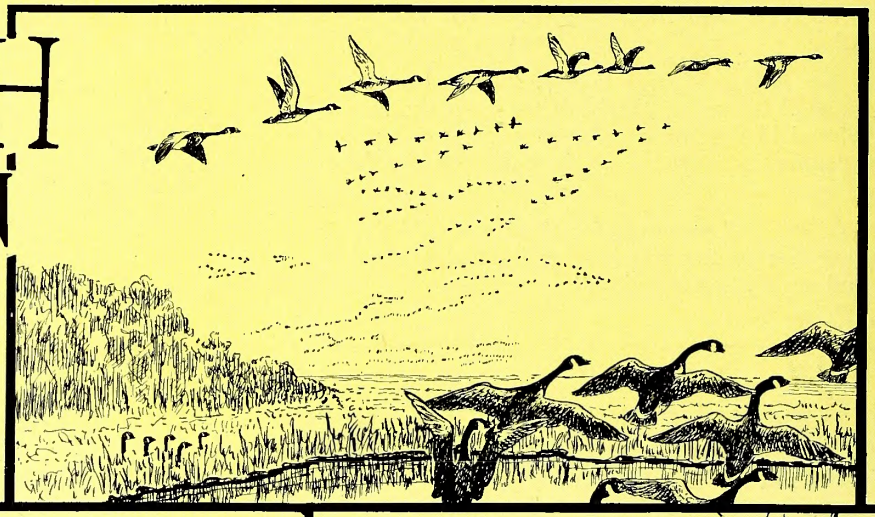
Discover the first trees and plants to flower in your neighborhood. Yes, all trees flower. Keep a record of the blooming date of trees. When do the first leaves appear?

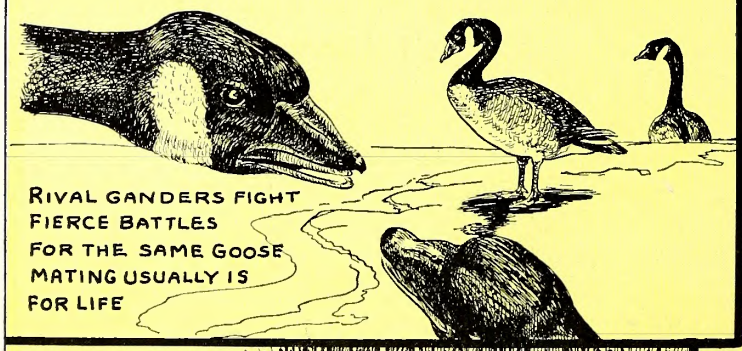
Stimulate interest in youth groups. Visit with youth groups to encourage a fuller recognition of the out-of-doors and leave with them your enthusiasm and experience with the out-of-doors.

NORTH CAROLINA STATE LIBRARY

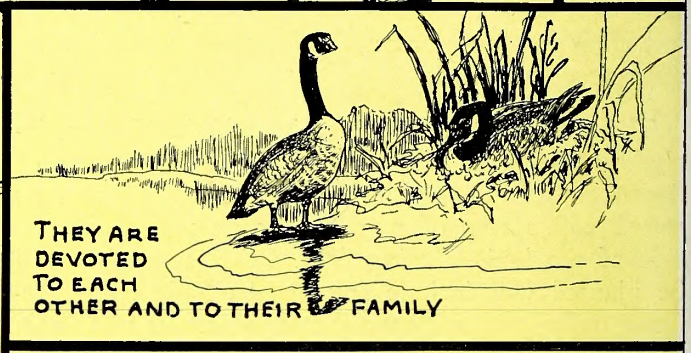
LET'S HELP NATURE WITH WISE USE

MARCH FULL MOON GEESE GO NORTH





RIVAL GANDERS FIGHT FIERCE BATTLES FOR THE SAME GOOSE MATING USUALLY IS FOR LIFE



THEY ARE DEVOTED TO EACH OTHER AND TO THEIR FAMILY

ANIMALS BIRDS AND FISH PREY ON EGGS & YOUNG

MOST OF THE GEESE THAT WINTER IN NORTH CAROLINA NEST IN THE AREA BETWEEN HUDSON'S BAY EASTWARD TO THE COAST OF CANADA – A FEW NEST IN THE NEW ENGLAND STATES – NESTING STARTS SHORTLY AFTER ARRIVAL – ONLY THE GOOSE INCUBATES THE EGGS THE GANDER STANDS GUARD – HE WILL FIGHT MAN - ANIMAL OR BIRD TO PROTECT HIS NEST OR FAMILY – YOUNG CAN FLY IN ABOUT 90 DAYS – GEESE ARE VEGETARIANS AND SPEND MUCH TIME ON DRY LAND GRAZING ON GRAINS AND GRASSES – AN AVERAGE OF 5 YOUNG ARE RAISED EACH YEAR.

A TRUE SPORTSMAN GETS THE CRIPPLES GET A RETRIEVER PUPPY NOW - IT MEANS MORE GAME AND LESS WASTE

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Wildlife IN NORTH CAROLINA

TEN CENTS APRIL • 1954

Photo by Jack Dermid

Opening Day

On April 5, ten days earlier than usual, thousands of trout anglers will take to the streams of Western North Carolina to fish for trout like this. In fair weather or foul opening day is a big day for the deciples of Izaak Walton. Here John M. Bennett, Asheville, poses in front of Looking Glass Falls with a brook trout.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

WILLIAM B. UMSTEAD
Governor

North Carolina Wildlife Resources Commission

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H. C. Kennett, *Vice-Chairman*	Durham
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COVER

The Cooper's hawk is one of only two hawks now protected by North Carolina law. The other is the sharpshinned hawk. See back cover for more information on these birds.

☆ ☆ ☆

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Anne Taylor ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

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FISH Those Headwater Streams!

by L. B. Tebo, Jr.

Fisheries Investigator

Photos by Jack Dermid

An experienced trout angler gives out with the inside information on where to find trout "in the wild." He also provides some timely tips about how to catch 'em.

Twelve fishermen drowning worms in one fair-sized pool adjacent to the road! This was a sight that attracted our attention one warm May morning on the Sherwood Management Area. Fishermen, in groups of two and three, were scattered at close interval along several miles of stream. A hatchery truck had visited this stream the preceding day, and brook trout 10 to 12 inches in length were being flipped out on the bank almost as fast as hooks could be baited and thrown in the water.

While the above is admittedly an extreme example it illustrates the situation encountered on many of the more accessible trout streams on the western management areas. In these days of heavy fishing pressure it is becoming increasingly difficult for an angler to locate a section of stream which has not been worked over by anglers immediately preceding him.

Twenty-five thousand fishermen days were spent in catching 100,000 trout from the streams of the western North Carolina Management Areas during the 1952 trout season. This is an increase of over 60% from the number of fishermen days on the same areas in 1947. There has been a consistent increase each year since 1947 and it is impossible to predict when the peak will be reached. Most of the fishing pressure is on the larger, more accessible streams.

Surprisingly, there are many miles of trout streams in Western North Carolina which are fished only once or twice a season. These are the headwater streams on the management areas and they provide excellent sport throughout the season. On many of these streams you can fish all day without meeting another angler.

Flowing along deeply shaded lanes of giant hemlock and through dense thickets of laurel and rhododendron the scenic beauty of the headwater streams is unexcelled. Because of the rapid fall in elevation the upper reaches of the streams are characterized by series of cascades and waterfalls with deep pools etched in the bedrock by the erosive action of swiftly flowing water. The size of the pools on some of these small streams is really amazing.

Because of their inaccessibility and the light fishing pressure many of the headwater streams are not stocked from the Wildlife Commission hatcheries. The fisherman can be assured that brook and rainbow trout taken from these streams will be wild, stream reared trout. Although averaging somewhat small (6 to 8 inches) it is surprising the number of 12 to 14 inch wild trout which can be located in a day's fishing.

Many sportsmen believe that the headwater streams should be closed to provide seed stock for the larger sections downstream. Competent fishery biologists have found that in the case of brook trout the closing of headwater streams does not accomplish the desired purpose. The result may often be a large population of small stunted trout. Studies so far, indicate that rainbow trout tend to migrate very little from the smaller streams. Closure when only one or two small streams are flowing

into a lake may be of some benefit because these streams may be the only areas where trout from the lake can reproduce.

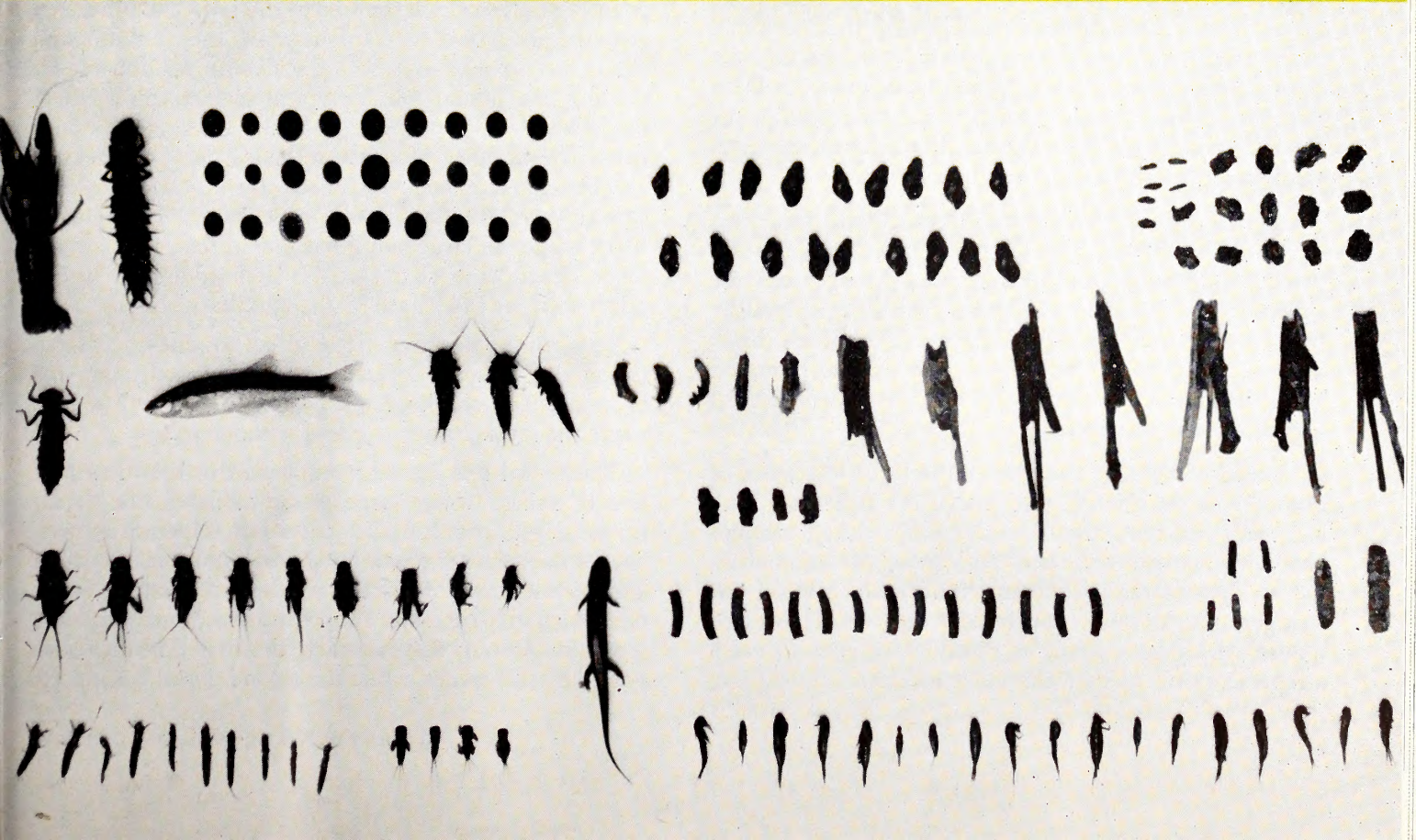
The food of trout is predominantly aquatic organisms produced in the streams. By far the most important group, from the standpoint of trout foods, are the insects which spend their immature stages in the stream. The stoneflies, caddis flies, mayflies and dragonflies are all aquatic in their immature stages and many of the beetles, two-winged flies and bugs are aquatic during at least one stage in their life cycle. These organisms lead a precarious existence at best and the periodic floods combined with the low fertility of many of the headwater streams keep food supplies at a low level. Removing part of the trout population by angling will make more food available to the trout remaining thereby resulting in faster growth.

Dense growths of laurel and rhododendron along the banks of many of the smaller streams make casting difficult. These close quarters make a rod of 6½ to 7½ feet easier to handle than the usual 8½ or 9 foot rod. The most effective method is to fish downstream allowing the current to carry your lure to likely spots. With a short tapered leader of 6 to 7 feet it will seldom be necessary for your line to touch the water. Leaders should be tapered to a fine point because the water is normally shallow and very clear.

The best bait or lure depends somewhat on the time of year. Worms, beetle larvae and wasp larvae are standard for the bait fisherman during the early months. During the latter part of the season grasshoppers are a favorite bait. The fly fisherman will find that the conventional mayfly imitations tied rather sparsely in subdued colors will consistently take fish. When fishing wet, the smaller nymphs tied to imitate natural foods in the stream and the well known wooly worm will fool many fish. For late season fishing imitation grasshoppers, beetles, caterpillars and ants are probably the best baits. The most important thing is to keep low and move slowly. Remember that the trout in these streams are wild and unsophisticated. If you can present a lure to them without being seen or heard they will strike almost anything. However, the slightest disturbance will send them scurrying for cover.

We won't attempt to name specific streams but fish checkers and other personnel on the management areas will be glad to direct you to seldom fished streams. Give some of the smaller, headwater streams a try next season. You will be assured of angling solitude amid beautiful surroundings. If you are interested in trout for the frying pan you won't find it necessary to go home with an empty creel.

Trout foods from a mountain stream. First row: crawfish, hellgrammite, water pennies (beetle larvae), snails, caddis fly pupae and cases. Second row: dragon fly nymph, minnow, stone fly nymphs, caddis fly larvae and cases. Third row: stone fly nymphs, salamander, caddis fly cases. Fourth row: burrowing mayfly nymphs, crawling mayfly nymphs, jumping mayfly nymphs.



How Fish Are Identified

by J. H. Cornell

Sketches by Duane Raver

The fisherman can identify the species of fish he is most interested in by observing their external characteristics. The structure of the fins and the numbers of supporting rays in the fins are characteristics which provide for identification in most cases. The number of rows of scales, and the number of scales in each row, are also important characteristics of each species.

Color is generally an undesirable identification characteristic because its intensity is so greatly affected by different types of water, by the age of the fish, and by the occurrence of spawning seasons. Also, colors tend to fade quickly after a fish dies.

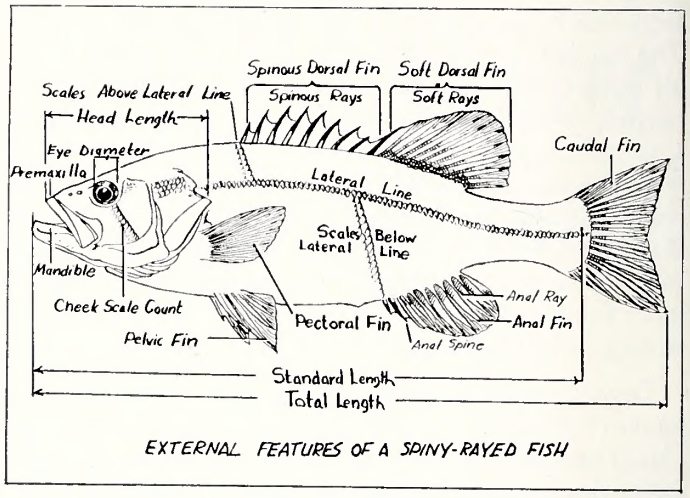
An exception to this in the identification of trout is that the brook trout always has a white margin on the leading edge of the pectoral, pelvic, and anal fins. The rainbow trout may have a bright red streak on its side, especially when caught in limestone waters. In soft waters, however, the red streak may be almost entirely lacking except in breeding season. A better mark of identification is the fact that the dark spots on the dorsal fin and tail are arranged almost in rows.

The brown trout has fewer and larger spots than the rainbow, and on the posterior part of his body the spots are restricted to the upper half. He has only a few spots on his tail.

When we consider that there are more than 3,300 species of fish north of Panama to be identified, and that North Carolina has approximately 350 species, the identification of each one is a complicated task, at least. Actually, the average fisherman is not interested in the identification of all these species, but only those which are of most interest and importance to him.

Upon being asked what they have caught, fishermen have been known to reply, "a couple of bream and some perch." But when the stringer was lifted from the water, it was observed to contain two bluegill sunfish, four crappies, one small black bass, and a golden shiner minnow. In order to be able to observe size limits on game fish, the fishermen should be able to recognize at least the game fish species.

Instead of valuing the catch entirely on the basis of numbers or on size of individuals, the fisherman who can recognize the various kinds he has caught obtains a much greater satisfaction and sense of accomplishment. The more he knows about each fish on his stringer, the more he appreciates the complexities of nature which have made it possible for him to catch a representative of that particular species.



EXTERNAL FEATURES OF A SPINY-RAYED FISH

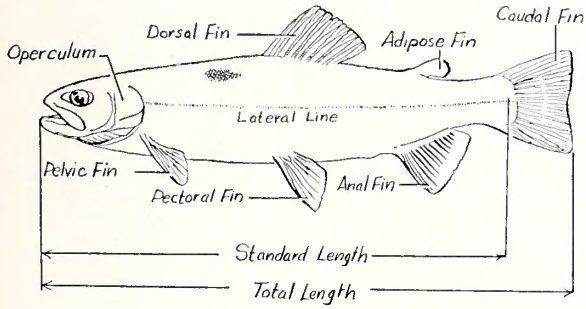
Since most of our fish are covered with scales, one of the primary points of distinction among the species is what is known as the "scale formula". When a fisherman catches a specimen which he does not recognize, and when he wishes to obtain information for later identification, his first step should be to determine the scale formula. First he should count the number of rows of scales from the forward edge of the dorsal fin down to, but not including, the lateral line. Next he should count the number of scales in the lateral line itself, beginning at the edge of the operculum and counting each scale in the line to the tail. The third step is to begin at the forward edge of the anal fin and count the number of rows of scales up to, but not including, the lateral line. A typical scale formula, then, might be 11-74-17 as might be found in the smallmouth bass. The number of rows of scales on the cheeks is another characteristic which helps identification in some cases. A smallmouth bass has seventeen or eighteen rows, while the largemouth has nine or ten. It is a much more dependable characteristic than trying to distinguish them by the length of the maxillary bone.

This same characteristic is used to distinguish between the pickerel or jack and the muskellunge, for example. The cheek of the pickerel is entirely scaled, while the muskellunge cheek is without scales.

The dorsal fins are most important in the identification of fishes. In one large group of fishes, the dorsal fin is single and contains only soft supporting rays. Such a dorsal fin is characteristic of the trout, the shad, and the minnows. Another large group has two dorsal fins which may be either slightly attached or completely separate. Among these species, the first dorsal is supported by stiff spines, while the second dorsal is support-

ed by the soft rays. There may be one or two spines at the beginning of the soft dorsal.

In indicating the structure of the dorsal fins, Roman numerals are used to indicate the spines and Arabic numerals are used to indicate the soft rays. In the smallmouth bass, for example, the dorsal fin is indicated as "X, 13 to 15", and the largemouth is indicated as "X, 12 to 13". In these examples, the comma between the



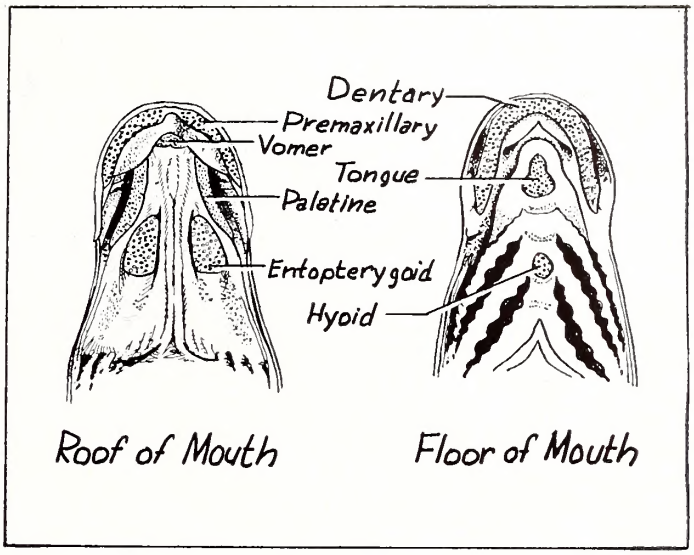
EXTERNAL FEATURES OF A SOFT-RAYED FISH

numerals indicates that the two dorsal fins are joined. If they were entirely separate, as in the case of the yellow perch, the numbers would be separated by a dash instead of a comma.

The yellow perch has thirteen spines in the first dorsal, which is entirely separated from the second dorsal. The second dorsal is supported by one spine and fourteen soft rays. Consequently, the dorsal fin formula for the yellow perch is "XIII-I,14".

The structure of the anal fin is similarly indicated. The formula for the anal fin of a largemouth bass would be "III, 10 or 11". The anal fin of most of the sunfishes contains three spines and a varying number of soft rays. Both the largemouth and smallmouth bass have three spines in the anal fin, but the rock bass has six spines. The crappies also have six anal spines, and must be differentiated by some other characteristic.

In addition to the actual structure of the fins, their location is often an identifying characteristic. In differentiating between the black crappie and white crappie, for example, color is useless as an identifying characteristic in spite of their names. The anal fin of both is "VI, 17 or 18". The dorsal fin of the white crappie has five or six spines, however, while the black crappie has seven or eight. One of the easiest means of identification is that the front edge, or "insertion", of the dorsal fin is farther back on the white crappie than it is on the black crappie. The distance from the eye to the insertion of the dorsal fin in the white crappie is much greater than the length of the fin itself. In the black crappie, the length of the fin almost exactly equals the distance from its insertion to the eye. Since



the fins are of comparable size, this shows how far back the fin is located and differentiates between the species.

The shape of the tail or caudal fin is important in the identification of some species. For example, the blue catfish and channel catfish have deeply forked tails, but the various bullheads all have tails that are nearly square. The various species of bullheads are most easily separated by the number of rays in the anal fins.

Among the sunfish the shape and structure of the operculum or gill flap is an identifying characteristic. In the bluegill sunfish, for example, the gill flap is blue-black, nearly square, and has a soft edge. In the robin, or yellow belly sunfish, the ear flap is the same color, but it is long and narrow. Because the ear flap is so long, it frequently is incorrectly called the "long-eared sunfish". The long-eared sunfish is not known to exist in North Carolina waters.

The arrangement of teeth and the types of teeth are important characteristics in some species. For example, the Kentucky bass or spotted bass looks very much like a largemouth bass to the average fisherman. It has a similar dark stripe down its side, and the fin formulae and scale counts are intermediate between those of the largemouth and smallmouth. The internal structure of the spotted bass is similar to the smallmouth, in that it has straight pyloric cecae rather than forked as they are in the largemouth. The one easily identifying characteristic is that the Kentucky or spotted bass has teeth on its tongue, and these teeth are lacking in both the largemouth and smallmouth.

The inclination of the average fisherman may be to say "So what?" It just means this! If you catch a 5-pound largemouth, you have a nice fish. If you catch a 5-pound smallmouth, you have one worthy of mounting as a most unusually large specimen of the species. If you catch a 5-pound Kentucky or spotted bass, you probably have a world record. Identifying your fish makes fishing more fun.

Deaton Photo

PRE-SEASON STOCKING is carried out according to plans despite sub-freezing temperatures on the morning of March 4 as hardy brown trout, plus a lot of rainbow and brook trout, were released in 38 degree water of Pigeon river. These trout, said to be the best released in years, came from 38 degree water at the Wildlife Commission hatchery, near Waynesville. Earl Williams, newly appointed Wildlife Protector, stationed at Waynesville, is shown assisting with the stocking program at right. Gurley Robinson, center, secretary-treasurer of the Haywood County Wildlife Club, of Canton, also does his share as Robert Pace, Jr., 12-year-old neighborhood youth looks on.

THE SPECIAL TROUT LICENSE

by Luther G. Partin

Education Representative

The fisherman's wallet is being wooed again. This time it was requested by the fishermen themselves to finance an expanded trout program.

The 1953 General Assembly enacted a law designed to improve the quality and quantity of mountain trout fishing in North Carolina, and, at the same time allow a larger part of the trout stocking program to be financed by those who enjoy its benefits.

The new law requires a Special Trout License, in addition to the usual non-resident, county, or state fishing license, to be purchased by all persons fishing in public mountain trout waters stocked at public expense. The new license will cost one dollar and ten cents ($1.10). The money resulting from its sale will be "used by the North Carolina Wildlife Resources Commission for propagation, protection, and management of such trout, and for no other purpose." Most of the money made available will be used by the Fisheries Division in expanding the trout hatching and rearing program. This will include improving present facilities and establishing new hatcheries or rearing stations when conditions permit. Investigations are under way to determine the feasibility of improving trout streams in North Carolina. Some of the money will be used for projects of this nature, if the investigations show positive results.

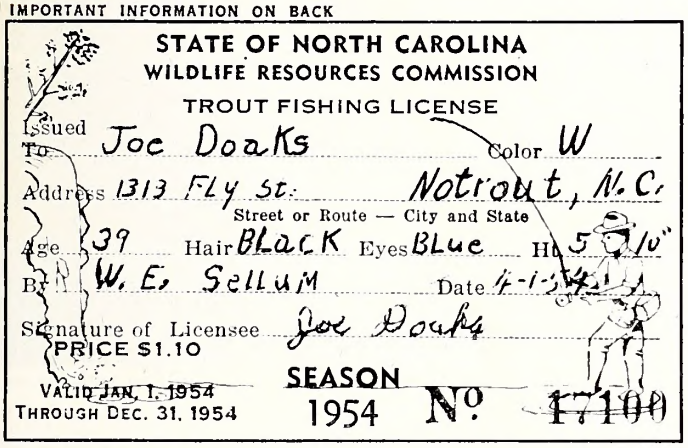
The underlying causes leading to the enactment might well be reviewed to provide background for a discussion of the new regulation.

Trout are the only fish which North Carolina rears in hatcheries and releases in public waters for immediate catch. Other fish, such as bass and sunfish are stocked in public waters; but these fish are stocked as fry, while trout are stocked as fingerlings, large enough for the pan. Wholesale fingerling stocking of warm water fish would not be feasible, because of the vast areas of such water in North Carolina. However, the combined area of all the trout streams in the state is smaller than some of our large warm water lakes, such as Lake Mattamuskeet. Thus we see that it is relatively easy to grow enough fingerling trout to stock our streams each year, but that it would be a different matter to do the same thing for our warm water areas.

Another reason for stocking mountain trout waters at public expense—the one that provides the real "clincher"—is the tourists from all over the state, and the nation, who swarm into the western counties to further increase the fishing pressure on the trout streams. The tourist trade is an important segment of the economy in these areas. Better fishing means more tourists—more tourists mean more money, and so on.

Trout stocking at public expense, then, has been justified for the foregoing reasons.

While stocking trout streams might be construed as providing special privileges for people in the trout fishing area, it does not appear in this light when all the relevant information is considered. For instance, mountain trout streams are usually very small and, as a result, have a narrow range of safe water levels during the spawning season. Drought conditions occurring during the spawning season, usually drastically reduce the next year's potential trout population. The great popularity of the scrappy mountain trout subjects trout waters to much greater fishing pressure per acre than other streams and lakes. The combination of heavy fishing pressure and small size causes trout streams to be "fished out" more often than other waters.



Shown here is the new trout fishing license, required of all persons fishing for trout in designated, stocked, mountain trout fishing streams.

Agitation for a Special Trout License was prompted by several weaknesses in the previous Fishing License Law. First of all, the original trout stocking program was financed by sales of fishing licenses of all types. A bass fisherman who had never seen a trout stream contributed as much to the program as the lucky fellow who lined his creel with rainbows, brooks, and browns, as well as bass.

Another loophole in the previous law, insofar as trout fishing was concerned, allowed anyone to fish anywhere in his county, without license, as long as he used natural bait. It has been estimated that fifty per cent of the people catching trout from waters stocked by the North Carolina Wildlife Commission do not buy a fishing license of any type. These people have merely been enjoying privileges provided them by laws that were not adequate under the existing circumstances. A situation prevailed whereby fishermen, making no investment at all, were sharing the returns from an investment made by sportsmen who were fishing out of their county or using artificial bait, or both.

The above grievances were voiced by numerous sportsmen. Many others throughout the state recognized the need for a larger investment in trout producing facilities, as well as a change in the Fishing License Law. A union of ideas from sportsmen gave birth to the new law, which takes a great step forward in the direction of better trout fishing.

The new regulation requires a fisherman to purchase the Special Trout License if he fishes in public mountain trout waters stocked by the state, regardless of his county residence or type of bait, unless he is fishing on his own land or is a minor fishing on his parent's land. An adult fisherman may fish in designed public trout waters in his county of residence without buying the usual county or state license, but he must have the Special Trout License. Anyone who does not fish in public mountain trout waters is not required to purchase the Special Trout License. With the exclusion of the above instances, the exceptions to the previous law also apply to the new law.

It all seems to boil down to this: more funds are being made available for use in the trout production and stocking program. The additional money is coming from the pockets of those who will enjoy any increased benefits. Fishermen who have previously been catching stocked trout without buying a license will now have to carry their part of the load.

The trout situation seems to be properly balanced now. The fisherman who contributes, also shares. The fisherman who shares legally, must contribute. The way is open for an expanded trout program supported by sportsmen whose fondest dream is to be standing in a rippling mountain stream with a flashing brook trout at the other end of a dancing rod.

Better get that tackle cleaned up and borrow an extra buck from the spouse. Both chores are laborious, but they're good investments.

BLUEBIRDS and TOBACCO BARNS

by Harry T. Davis

Director, State Museum

The author presents proof that modern tobacco curers are death-traps for bluebirds. This colorful vanguard of spring, with his flashing colors and delightful song, is a valuable insect-killing bird. The author tells how to make tobacco barns safe for bluebirds. Write the Wildlife Resources Commission for simple plans for bluebird houses.

Photo by Jack Dermid

Bluebirds have long been a pleasing feature of the mid-south countryside, especially in winter and spring. They dart down from post, tree and wire perches to take the errant insects. The cool air is expectantly warmed with their plaintive warbling calls. They nose into crannies and hollows with the age-old urge to nest and rear their young.

In "Birds in your Back Yard" Virginia S. Eifert gives this word portrait of this bird. "Long ago in the Massachusetts colony which had somehow survived that first cruel winter at Plymouth, the people were hungry for the sight and sound of spring. The harsh pines on the sandhills thrashed in a strong southeast wind off the Atlantic. Gulls along the shore screamed and dipped and then—one day in late winter the children, who had ventured a little way from the cabins, came running home to tell their parents of the Blue Robin they had seen. It was so much like the beloved English Robin they had left behind in the hedgerows of old England, yet this one was blue—bluer than the ocean, bluer even than the sky! And so the Pilgrims named it the Blue Robin, our Bluebird which today is greeted with almost the same thrill and pleasure as the Pilgrims felt at the sight of it.

"Now, as then, the Bluebird is the sign of spring. One day it suddenly appears on a fence post or apple twig, and like a blue feather, drops down, picks up something, and is back on its perch again.

"Indians said that the Bluebird was made of blue sky, red earth, and the remnants of snow left over from winter—a composite made by the Great Spirit to foretell the coming of spring".

In February, 1895, a blizzard moved into the southeast to cover the earth and trees with ice for many days. Bluebirds were starved and frozen by the thousands. For many years thereafter they were rarely seen.

With population now built back there comes another menace to this harbinger of spring. Observers have noted their scarcity in areas that have modern tobacco curing barns. Rural dwellers first noted the scarcity, evidence that the busy farmer has an eye for the friendly birds.

The farmer is also due the credit for finding the reason for a scarcity of bluebirds. They report that the modern tobacco barn furnace is the trap that unwittingly kill hundreds of these birds. The old wood-burning furnace had large pipes and ample escape openings. The process of seeking refuge from cold, and sites to nest and rear their young, leads our bluebirds to go into the typical four small pipe openings near the top of the modern barn. Once the bird has entered this smooth pipe which is too small to fly from, the victim flutters all the way down to the burner pot.

In late July and August, when it is time to cure tobacco, the operator examines the pot to find the numerous, starved and dried bluebird bodies.

In the Chat for March, 1953, Guy V. Gooding, Jr. reports: "Do a significant number of common bluebirds die each year in tobacco barns? We have five tobacco barns on our farm three miles north of Kenansville, a small town in southeastern North Carolina. In mid-June, 1951, I found between 20 and 25 bluebirds in each of two barns (the other three were not examined). The birds were well dried and were equally distributed among the four burners in each barn. In June of 1952 I found only four dead bluebirds in each of the same two barns. On January 17, 1953, there was but one dead bluebird to be found. It would seem that these birds entered the flues during late winter or spring. When it is considered that there are thousands of such barns in North Carolina alone, the matter seems worth further investigation".

On April 9, 1953, Thomas H. Penny of Garner, N. C. wrote the Progressive Farmer as follows:

"In this State the Bluebird is being wiped out. I would like to see something done about it, but there isn't much I can do. In 1951 I bought a tobacco barn. My barn had oil burners in it with stacks out the top of the barn. When I cleaned my burners I got 38 bluebirds out of the 4 burners. At this rate, it won't take long to completely wipe out the bluebird. This was just one barn. The country is full of barns using these burners. The bluebird flies in the stack, which is a 6-inch pipe, looking for a place to nest. He falls down the stack and can't fly back up. He then goes into the burner and starves. For the past two years I have left my burners' heads off and I haven't found any birds in them. This is April 6, and I haven't seen a single bluebird this year. I believe they have already been wiped out in this area. If you will please put a little piece in your Progressive Farmer and ask the tobacco farmers to leave the heads off the burners after curing season so the birds can escape, maybe we can still save this most valuable insect-killing bird whose beauty and song are a delight in the spring."

In September, 1953, Editor Poe carried Mr. Penny's report and a brief editorial comment.

In the Progressive Farmer, of November, 1953, Mrs. Ruth Bryant Sneed, of Dillon County, South Carolina, writes as follows:

"I was interested in Mr. Penny's letter on saving our bluebirds because I have been deeply concerned over these beautiful birds for six years. A large family of bluebirds that had for years thrilled us with their beauty and song was trapped in our neighbor's flue-stack. I join Mr. Penny in the sincere hope that people will cooperate in keeping our bluebirds from becoming extinct.

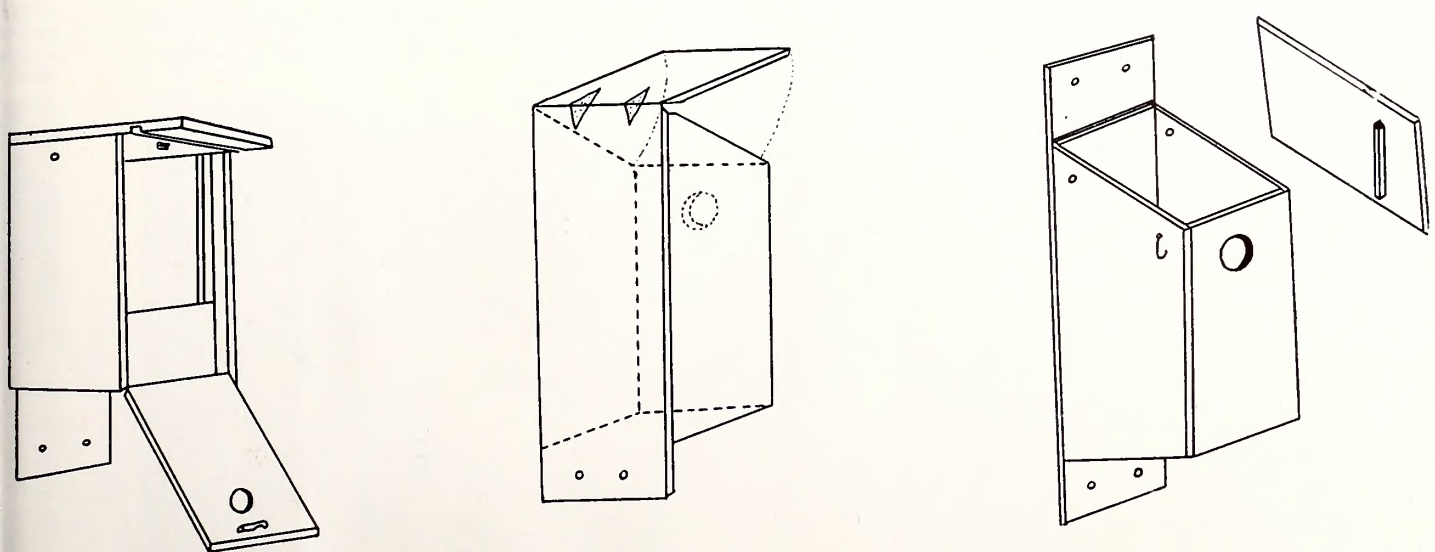
Bluebirds can't stand severe cold as well as our other resident birds, and I believe they enter the barn flues not to nest but to keep warm. It seems to me that it would help a lot if all the burner makers would ask their customers to leave the burners open to provide escape for a trapped bird".

In June, 1953, observer James L. Stephens was asked about the fatalities in the Lumberton, N. C. region. He reports that he has estimates of hundreds of bluebird bodies that were cleaned from such tobacco barn furnaces, and that there must be hundreds more that have not been reported. The Carolina Bird Club has asked that its 1,200 members make inquiry and report on this mortality.

Thus far, we can only speculate that lesser numbers found in later observations may be due to bird scarcity, or to some instinct that curbs their entrance into the smoke pipes.

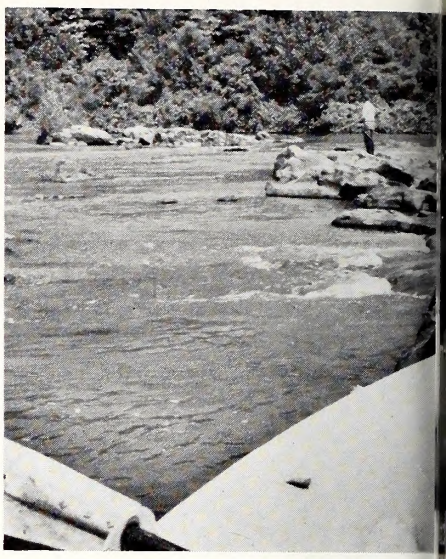
The obvious remedies are to keep the birds out of the smoke pipes by screening, or (easier) to leave the burner pots open to the extent that the bird can get out into the barn, and then get out of the barn by a door ajar, or by the ventilator overhead.

Tobacco is of tremendous material importance in this growing region. We must have this source of income, but the grower who cares can make his home surroundings happier by doing his bit to help save the lives of the friendly bluebirds.



The sketches above can serve as a guide in making homes for bluebirds.

Cold, wind driven spray does not stop this angler from fishing the deep pool below Looking Glass Falls in the Pisgah Game Preserve. One of four nice trout he caught is shown on page 2. There are over 1,000 miles of designated trout waters in North Carolina open to the public.



Broad rivers offer both good fishing and
thrills of drift fishing in a rubber liferaf
The angler, above, paused to cast for
likely spot of the New River before s
another good fishing hole.

FISHERMAN

Photo Fe

North Carolina offers an almost unli
the sparkling trout streams of the
of the east, there are countless choic
of fisherman. There are rugged, he-
the sun. There are different species
walleye, bluegill, and rock hint of
gear. The dry fly purist, the spinni
all have a place.

If fresh-water angling is not enough
320-mile coastline are miles of unsp
mile upon square mile of sound, a
ranks fourth in the nation in the a
sounds. The water's there, the fish a

According to Soil Conservation Service records, 11,795 farmponds have been constructed in North Carolina since 1938. Over 2,000 were built in 1953 alone. Farm ponds need to be fished heavily to prevent an over-population of tiny fish.

Many anglers may not be aware of the numerous fresh-water ponds hidden behind the dunes at Nags Head and Kitty Hawk. Nice catches of big bass and bluegill are taken from them regularly.

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apids to

Aerial view of Badin Lake. From the air, power reservoirs look like monstrous amoebae, and their miles of fishable shoreline are apparent. The wildlife Commission has introduced free-spawning walleye and white bass into many reservoirs to provide better fishing. These fish are able to reproduce . . .

. . . when largemouth bass and bream beds are destroyed by fluctuating water levels. Here anglers fish for carp in High Rock Lake. Commission biologists are conducting research projects to find out how much damage rough fish do to game species and how to economically control their numbers.

ARIETYLAND

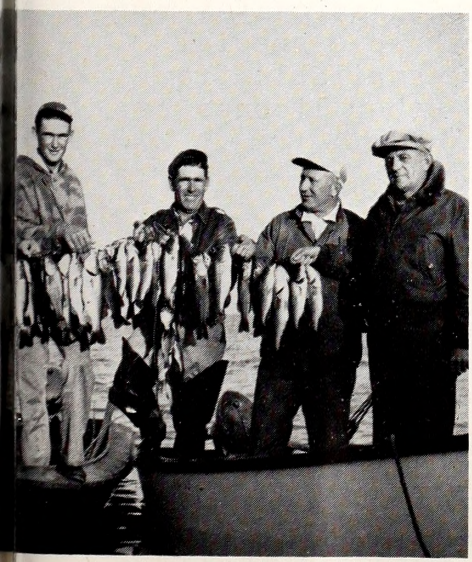
k Dermid

st of fishing waters to the angler. From
the somber and lazy cypress swamps
isfy the exacting whims of every kind
nd tranquil shores made for sitting in
atch the waters—rainbow trout, bass,
nd sizes to match all types of fishing
or the school kid with a willow pole

or salt water. Along North Carolina's
, scores of estuaries and inlets, square
ish producing Gulf Stream. The State
und waters—2,284,800 acres including
ring is fast unfolding. Let's go fishing!

Tall cypress festooned with Spanish moss, cool shade and black waters, turtles sneaking off snags before the skiff, and handsize bluegill tearing up the surface after popping bugs—who could ask for a better world of enchantment?

Sound! Here's proof of good bass fishing.
st during April and early May. In hot
g a fat minnow on the shady side of a
!



NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Mountain Trout Fishing Season Opens April 5

Fishing for mountain trout in North Carolina's streams opened ten days earlier this year, on April 5 instead of April 15. Action on this was taken last winter when the Wildlife Commission met to set the 1954 fishing regulations. By opening day initial stocking of thousands of rainbow, brook and brown trout will have been completed with additional stocking to be done during the fishing season.

* * * *

Striped Bass Hatchery Ready for Action; Fishermen Urged to Bring in Eggs

With the Weldon striped bass hatchery ready to operate in anticipation of the annual striped bass run up the Roanoke River, the Wildlife Resources Commission has again urged sport and commercial fishermen for striped bass to bring in roe and male fish to the hatchery for egg and spawn removal. Again this year the Commission will pay $20 per million eggs from "ripe" fish, and a single large female fish may be worth $20 in eggs alone. Once eggs and milt are removed fish are returned to the owner.

* * * *

Boat Landing Facilities Ready at Weldon

A steel launching track with a winch and dolly is ready to launch boats down the steep banks of the Roanoke River during the striped bass spawning run. The launching facilities are available free of charge to anyone wishing to launch or land a boat for river fishing, and is located at the recently developed fishing access area on the striped bass hatchery site.

* * * *

Trout Licenses On Sale at License Dealers

All persons fishing for mountain trout in stocked, designated mountain trout streams this year will be required to purchase a special trout fishing license costing $1.10. The licenses are available from regular sources and must be purchased in addition to other license requirements.

* * * *

Wildlife Habitat Improvement Plantings Completed

Several thousands of coveys of quail will be added to North Carolina's quail crop as the result of millions of bicolor lespedeza and multiflora seedlings distributed to and planted by Tar Heel farmers and sportsmen during the past season. The habitat restoration program is based on the fact that $100.00 spent for habitat improvement will produce ten times as many birds as the same amount of money spent to raise and stock artificially propagated birds.

SCHOOL PAGE . . .

by Lunette Barber

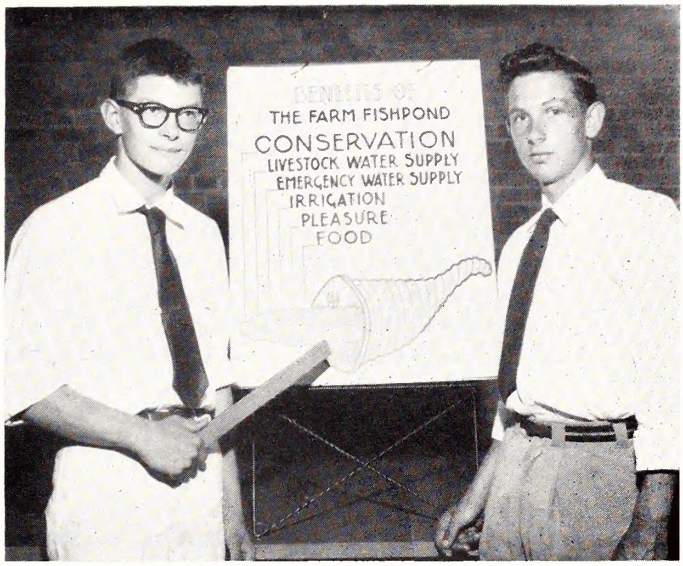
A Story of SUCCESS, *Made Possible By* CONSERVATION

Two lovers rode along one day—the lady an art teacher, the man a bank employee. Seeing a poorly managed and badly eroded farm with an old dilapidated farmhouse, conspicuously hugging a lovely knoll, the lady exclaimed, "My, with interest, energy, enthusiasm, and a little cash what a fellow could do with that!" Right then and there the banker's rate of interest increased 1000% and he thought his best investment would be a bride. They are now Mr. and Mrs. Robert S. McFadden, Route 4, Spencer, North Carolina. Today she is teaching; he is still banking.

Not too long ago they decided to buy a tract of land similar to the scene that led to the proposal for marriage and develop it with that enthusiasm into an all-year grass farm since they had a son, Daniel who is 16, and a daughter, Susan who is 13, possessed with interest and energy for everything. The family held many discussions and finally all agreed, "We may not get rich, but we can live like millionaires on a farm."

Photo by Dan McFadden

This farm pond makes an attractive setting for a farm home, and provides both food and fun.



Dan McFadden, left, and teammate Ben Gobble with their prizewinning poster on farm fishpond benefits on water and soil conservation.

So they moved out even before the home was remodeled and decorated. The 130-acre farm and buildings were far from perfect, but plans were soon under way for an all-out conservation program—soil, water, forests, and wildlife. Dan and his father planned together, but in a short while Dan joined the 4-H Club for the first time and chose Soil Conservation for his project. From that time on activities on the farm became Dan's interest and work. His individual accomplishments are too numerous to mention but below are a few: 12 acres of permanent pasture established, a farm fishpond built, bicolor and sericia lespedeza planted, surveyed an additional pond site on which the pond has since been built, and surveyed one for a neighbor, planted 4 acres peas and turned them under, fertilized an old fishpond. The project was under the supervision of his Assistant County Agent, Mr. Glenn Tussey, with other agencies assisting—the Soil Conservation Service, the Extension Forest Service, the Wildlife Resources Commission and others.

Hundreds of people learned about the Soil Conservation Project because Dan entered the Soil and Water Conservation Demonstration Contest which is sponsored each year by Firestone and he and his teammate, Ben Gobble, became state winners. The demonstration was on Farm Fishponds and because Dan had familiarized himself so thoroughly with the subject through experience and observation, plus his sincere interest, he was able to put it across exceptionally well. The demonstration was given several times later for different groups but once Dan gave it alone because his teammate was unable to help.

Sister Sue must be recognized for her 4-H activities and is learning much from Dan. This year she is planting strawberries for her outdoor project.

See SUCCESS Page 23

Dear Joe

Joe is not one individual. He is a sort of composite of all the sportsmen of North Carolina. Joe goes hunting and fishing as much as time will permit, and questions frequently arise in his mind about the wildlife on his favorite stamping grounds. Sometimes he cannot answer these questions himself; so he writes the Wildlife Resources Commission. These letters are our answers to Joe.

JOE DOAKS

Wildlife Resources Commission
Raleigh, N. C.

Gentlemen:

Why doesn't the Commission buy quail and restock them for the licensed hunters to shoot?

Very Truly Yours,

Joe Doaks

Dear Joe:

We are glad you brought up the question, since we recently received inquiries from two other sportsmen who asked the same thing. We used to have this one tossed at us much more frequently several years ago, but the last year or two these requests seem to have dropped off. Apparently our program of quail restoration through habitat improvement has started to pay off in most parts of the state. But to get back to your question, Joe, let's quote a few facts and figures to point out why we have abandoned restocking in favor of habitat restoration.

For example, let's just figure out how much it would cost to depend on stocked birds for quail shooting. Suppose that we would take as our goal the stocking of one pair of quail for each Tar Heel hunter. This would be five dollars a pair times 300,000 hunters and would come to 1½ million dollars, assuming that all the birds we put out were bagged. But, according to studies conducted here and in other states too, you can expect to harvest only from one to ten percent of the total number of quail stocked. So, at best, even if we count on bagging a full ten percent, we would have to stock 3 million pairs of birds in order to bag one pair for each of our 300,000 sportsmen. At five dollars a pair, this would come to a tidy 15 million dollars, or about six times the total budget of the entire Wildlife conservation program.

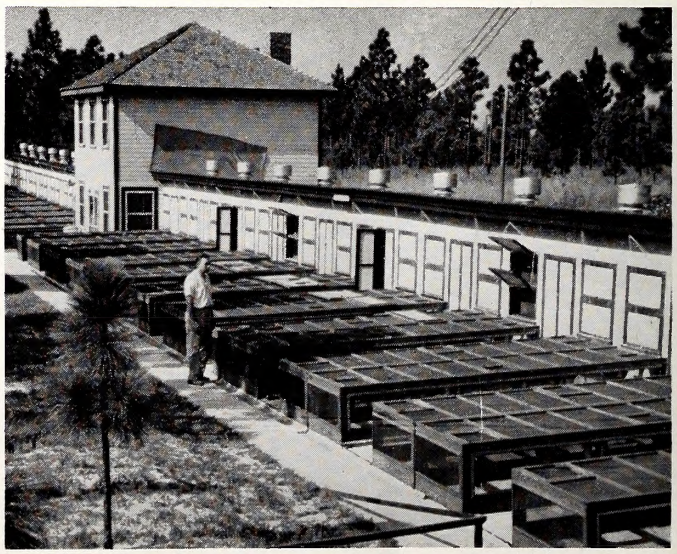
Of course, you are right when you point out that not all Tar Heel hunters are quail men. But, if we assume that about one-sixth of them are (and this is roughly the case, judging from surveys we have conducted), then to be fair to all we ought to aim at supplying at least one day's bag limit to each one. But here we go again. Since pen-reared quail do not survive upon release, we would have to stock at least 40 pairs to attain a "goal" bag of four pairs per quail hunter. Forty pairs at five dollars each times 50,000 quail hunters comes to ten million dollars. We are getting closer—this is only four times the total Commission budget!

Regardless of how many we were to stock, Joe, the fact remains that restocked quail are too expensive because of their very low survival rate upon being released from the pen.

You can expect to harvest only from one to ten percent of the quail stocked. Fall stocking results in a better percentage than spring stocking, but even here you can expect better than ten percent return only if you release in front of the gun.

We are not the only ones who have come to this conclusion, Joe. Over in Kentucky, they released 1,028 banded quail, some in the spring and some in the fall.

THE OLD AND NEW METHO



Birds reared in pens are expensive, seldom survive more than a few weeks after release.

Of those that were released in the fall, before the hunting season, less than 28 percent survived until the opening day. Further check showed that only three percent of the birds stocked were taken by the hunters. So you see, we were being overly optimistic when in our computation above we assumed a bag of ten percent of the number stocked.

Out in Oklahoma, they released 57,062 banded quail from 1942 to 1946. When they figured up the returns in 1947, they found that only 1¼ percent of the birds had been recovered, nearly all by hunters, immediately following release. There were no holdovers to serve as breeders to *permanently* build up the population of quail.

Another state released 13,500 banded quail and offered to pay $1.00 for each band return. Less than 1¼ percent were returned.

Out in Missouri, they selected two 2,000-acre areas and stocked one, but not the other, each year for a period of three years. I know it may be hard to believe, Joe, but this is the actual record: from 366 banded birds, only three were subsequently reported, but no bands were actually recovered. Less than one percent return! But what was even more revealing, the population on the stocked area became less and less each year in spite of stocking. Not only did the stocked birds fail to breed, but they seemed also to have a bad effect on the breeding of native birds as well.

After a rather detailed study, the folks down in Louisiana concluded that "the release of considerable numbers of pen-reared quail on various types of ranges have had little or no value in significantly raising the population level of the areas." They, too, found evidence that, rather than improving the situation, restocking actually resulted in lower quail populations, as was reported in Missouri. Three years of study showed an average of less than six percent survival with practically no reproduction from birds released.

Sure, we can release birds at five dollars a pair, Joe, but if even ten percent were bagged, each pair in the bag would cost not five dollars, but $50; and if only 1¼ percent are bagged as was reported in Louisiana and Oklahoma, then each pair in the bag represents a $400 drain on the sportsman's budget.

Some other points came to light in the course of these investigations that will interest you, Joe. You of course know that native quail have a strong covey instinct, roost in the open, "freeze" on approach of danger, and flush in unison. On the other hand, stocked birds do not have a well-developed covey instinct, and they roost under cover, making it harder to get a covey shot. They do not recognize man or dogs as danger and do not "freeze." In fact, they continue to feed or run, thus ruining an otherwise good point. When finally flushed, they do not rise in unison but get up two or three at a time. This, of course, makes for easier shooting, but also guarantees prompt extermination by the ruthless hunter.

In light of these facts, we believe you will agree that quail restocking is not such a good idea after all, and a most expensive one at best. We know what your next question will be, Joe, so we may as well answer it now: *The most effective way to restore quail is by habitat improvement—providing adequate food and cover.*

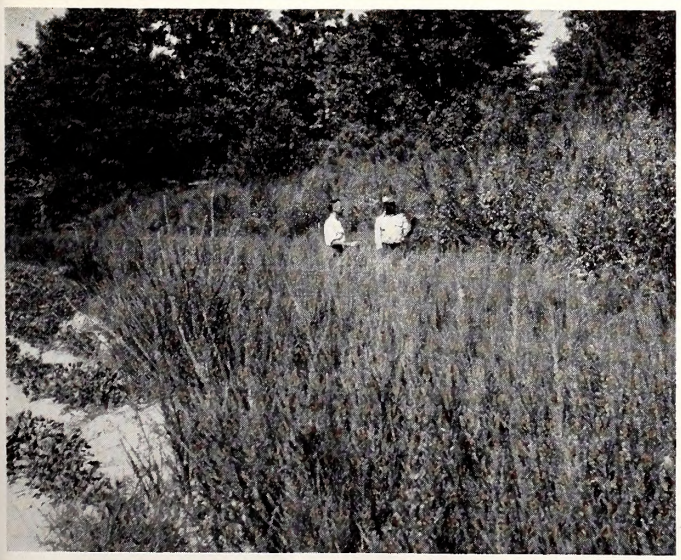
There are many ways that this can be done, Joe—leaving unharvested small patches of field crops such as corn, peas, soybeans, milo, lespedeza, etc., or actually making plantings of these species in strategic locations. Providing cover for protection from hawks, foxes, owls, and most important, bad weather, is also very helpful. This can be done by leaving odd corners and other strategically-located spots grow up to weeds, briars, honeysuckle, ivy, broomsedge, roses, and so on.

In addition to this, there are certain species of plants which have been found to be especially suitable for holding and building up quail populations. Bicolor lespedeza is the most important of these because it provides a favorite, highly nutritious food after most other foods are gone, during the late winter and early spring. Sericea lespedeza provides excellent roosting cover and some food. Mutliflora rose provides very fine protective cover. We also distribute ten-pound bags of seed mixture to sow quarter-acre food patches.

All of these are distributed to sportsmen and landowners by the Commission free of charge, Joe—the bicolor and rose as plants and the other as seed. And the results? A few weeks ago I was out with a man who said that before he did a habitat face-lifting job on his place he had to hunt hard to find three coveys of quail. Since then, he has planted 40 patches of bicolor lespedeza (1,000 plants to a patch), and he now claims a

•——————See DEAR JOE Page 18

UPLAND GAME MANAGEMENT



Ten times as many wild birds can be produced for the same amount of money by providing suitable places to live.

BACKYARD CONSERVATION

by Bill Hamnett

Cooperation and Conservation

Food, cover, and shelter are mentioned more often than any other management practice to increase, maintain, or restore wildlife resources of the state. Many people are familiar with the Commission's farm-game program and are realizing the benefits derived. But, there are other people of the state who would like to do something constructive in wildlife conservation and management, yet do not possess the farmland or large areas they think they should have to work with. DO NOT let the scarcity of land bother you, there is a great amount available yet. Ask your friend, neighbor, or country cousin to listen to you while you explain what you want to do. There is no doubt he will work with you and even encourage you to go ahead with your idea and his help. The benefits of reduced soil erosion, water conservation, and increased cover and food for farm wildlife will show how wise the plan is.

Having made your contact present your plan and material to your co-worker in this "backyard conservation" project. The following is a suggestion of what you may offer for a *one acre* development.

Mixture To Plant For Quail And Songbirds

Japanese or German millet	3.5 pounds
Milo Maze	2.5 "
Amber sorghum	2.0 "
Sunflower	2.0 "

This mixture is primarily intended for small birds, but the resulting food and cover will be utilized by all farm wildlife.

Unharvested grain left at the edge of fields provides emergency food for quail and other wildlife.

Planting For Rabbit Food And Nesting Cover

Orchard grass	5.0 pounds
Sweet clover	10.0 "
Timothy	4.0 "
Ladino clover	1.0 "

This may be planted with oats in fields (per acre basis) or by itself. The seeding of clovers and grass will not only furnish food but also nesting cover.

Other Food Strips

All wildlife, including deer, wild turkeys and grouse utilize food strips planted on submarginal fields near heavily wooded ridges. A fall or winter grain seeded to clovers and grasses is particularly beneficial at these locations.

DEAR JOE

from page 17

covey per patch. I can well believe him since his 40 patches are scattered over 5,000 acres, and what is more, we found fresh sign in most of those we looked at.

The payoff, though, is the way he hunts. He has a fine pointer bitch that he carries in the back of the pick-up truck. He drives a route which takes him within about a hundred yards of each bicolor patch. The dog jumps off at each patch, and, if the birds do not happen to be in the patch, she comes right back and gets on the truck and off they go to the next one. If there are any birds, she holds them while he gets out of the truck to get a covey shot, and a bird or two.

This, of course, is just about the ultimate in quail hunting, Joe, and it was brought about not with stocked quail at a cost of $50 to $400 per pair in the bag, but with patches of bicolor lespedeza produced at $5 per thousand plants. And that five-dollar patch produces not just one pair of quail, but a whole covey; and not just for one year, but for ten years or more.

(The oldest North Carolina bicolor patch that is still producing seed was planted 16 years ago.)

So that's the answer, Joe. All the evidence we have been able to gather demonstrates that we can produce a whale of a lot more quail shooting, and better quail shooting, and sustain that shooting over a longer period of time by habitat improvement. The sportsman's dollar produces incomparably more sport this way than by using it to buy artificially-reared stock, from which we can expect less than one-out-of-ten return at the very best.

Sincerely,

Frank B. Barick

Management Area Hunting Results

by Erwin A. Heers

U. S. Forest Service, Atlanta

Preliminary returns from supervised hunts on national forest wildlife management areas in five southeastern states—Alabama, North Carolina, Florida, Georgia, and Tennessee—bear eloquent testimony that game management in cooperation with state wildlife agencies is paying dividends.

In spite of some disruption of hunting schedules resulting from extreme forest fire hazards, particularly in the mountains, these five states reported the largest harvest of big game since management and a systematic check on the annual kill began. Incomplete reports indicate the bag of small game from these areas will reach record proportions, too.

Big game reported killed during managed hunts in the five-state area include: 2,665 deer, 53 black bear, and 51 wild boar. Nearly 70% of the deer, all of the wild boar, and all but five of the bear were taken in the Appalachian Mountain forests of Tennessee, Georgia, and North Carolina.

Tennessee's total of deer taken in 1953 scheduled hunts jumped phenomenally to 812 from slightly more than 200 the year before, due mainly to range conditions which permitted removal of both sexes, and no limit in the number of hunters on both Tellico and Andrew Johnson management areas. On the Ocoee area, the first two hunts were limited to 300 permits with no limit on the last hunt. Tennessee hunts accounted for 32 of the wild boar total and 12 bear.

Pisgah and Nantahala management area hunts in North Carolina reported totals of 807 deer, 36 bear, and 19 wild boar taken. Big game hunting around the eight separate wildlife units on these forests also was reported excellent, with the total deer and bear taken outside estimated to be equal to or greater than the kill by management area permittees. Prior to the big game hunts and forest closure because of fire hazard, North Carolina wildlife area hunters bagged 8,502 squirrels and 79 grouse. Permits for small game hunts were to continue there into January.

A total of 1,621 permittees—36 less than last year—engaged in deer hunts on the Chattahoochee National Forest in 1953 and killed 46 more deer—a total of 240. The Blue Ridge, with 714 of the registered hunters, accounted for 96 of the deer killed, but the Chattahoochee unit, with 72 deer for 324 hunters, led all areas in hunter success ratio.

The Ocala, with the oldest and largest wildlife management unit among Florida's National Forests, led in that State with 5,000 of the 6,199 registered hunters and 524 of the 665 deer harvested. Small game also were hunted on the Ocala unit for a total of 1,585 squirrel, 319 quail, and 29 turkey. The Osceola and Appalachicola forests accounted for the balance of Florida deer taken during managed hunts, but the Appalachicola was the only unit reporting successful bear hunters—five.

The ratio of deer hunters' success was low on the Black Warrior, Choccolocco, and Oakmulgee management units of the Alabama National Forests where deer population is recovering steadily from depletion by a "black tongue" epidemic of 1949. But the enthusiasm of Alabama's hunters knew no bounds. A total of 2,767 registered for the managed deer hunts which netted 141 bucks, with the Oakmulgee unit taking credit for both the largest deer—215 pounds— and the head with the largest antlers—16 points. Other hunts on Alabama units featured duck, turkey, quail, and squirrel.

Special deer hunts for archers were scheduled on three forests—the Chattahoochee, Pisgah, and Ocala—but only the Ocala reported success by bow-and-arrow nimrods—two hunters got their buck.

Rattlesnakes, contrary to belief, do not seek to avenge the death of a mate. They are attracted to the death scene by scent.

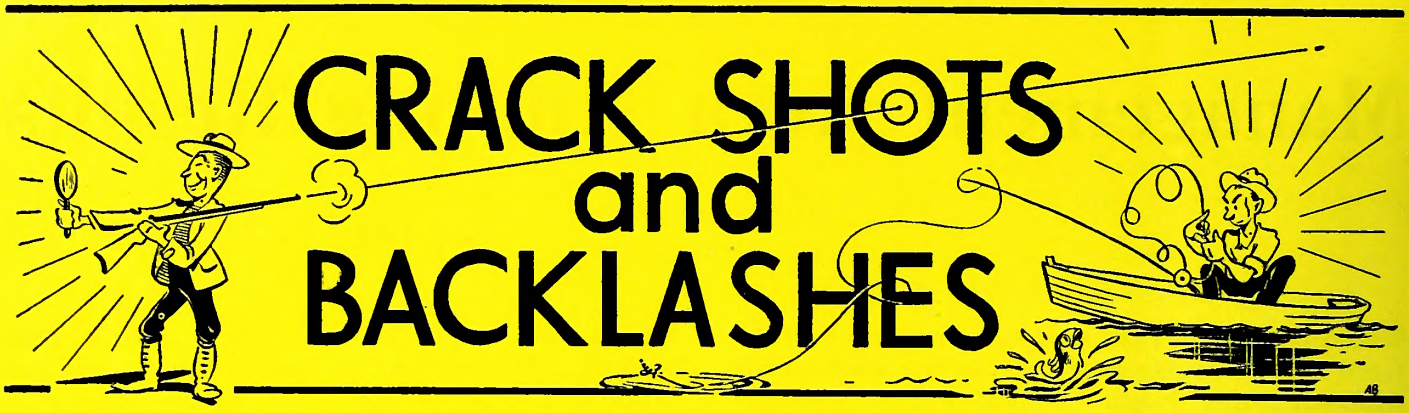
* * * *

It is safe to hold a queen bee in your hand since they only use their stings on other queen bees.

STANLY COUNTY FIELD TRIALS

Photo by Luther Partin

Shown here are the three top place winners in the Stanly County Wildlife Club field trials. Left to right: C. M. Furr, Stanfield, with Gary; F. L. Marbry, Badin, with Bob; R. E. Marbry, Badin, with Medic's Prince.



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

The month of March was a busy one as far as meetings of various kinds were concerned. Number one national meet was the 19th North American Wildlife Conference in Chicago. This was followed by National Wildlife Week March 21-27. Here at home there was evidence that more and more organizations of various kinds are becoming conservation conscious, and more important, becoming active in conservation work. Garden clubs, women's clubs, civic clubs, scouts, 4-H and FFA groups, to name a few, are taking conservation as a theme. The trend is nation wide.

April is a month when buds and blossoms burst forth, and fishermen who have been building up a head of steam all winter long, can no longer resist the call of the rod and reel, the pole and line and worm, and the wily bass and trout.

Speaking of trout, the law requiring a special trout license to fish in certain waters went into effect last January and went into action April 5 with the opening of the trout season. This issue contains an important article on the trout license law that every trout fisherman should read. It is by Luther G. Partin, a newcomer to the staff of the Wildlife Commission's education division.

Rockfish anglers along the Roanoke River are wondering about the outcome of a request for controlled water release from Kerr Dam during the striped bass spawning run. The Wildlife Resources Commission has outlined specific water needs to the U. S. Army Engineers which, if granted, would assure a spawn of stripers and plenty of sport for anglers during the rockfish run. Reduced to fundamentals, the question of striped bass fishing vs kilowatts is this: which is more important to the most people—usable electric power that was not in existence three years ago, or a million-dollar annual fishery that was a source of food long before Ben Franklin flew his famous kite?

Sometimes intra-office correspondence turns up good crackshot and backlash material. Don Hankla, district biologist in Burlington wrote, in part, this:

"I received a call . . . pertaining to some reports regarding the killing and eating of robins by some people in and around Swepsonville. (She) wanted to know what the fine was for killing robins, and also said that she had heard that there was an open season on robins last year.

"I told her I would refer the matter to the Raleigh office . . . and would send the game protector around to see about the situation . . ."

There probably never has been a legal open season on robins, certainly not last year. In late winter robins concentrate by the thousands in roosts in various parts of the state. It is sad indeed that some people kill them for food or any other purpose. Robins are classed as insectivorous songbirds, protected by both state and federal laws. The fine for killing robins illegally is $500 plus a few months in prison.

So many requests have come to the Wildlife Commission for information on raising earthworms that we have had reprints made of an article on the subject that appeared in the September, 1953 issue. A postcard will get you a copy of the reprint.

Last month, and again this month, WILDLIFE has reproduced the work of Hal Johnson, a free lance cartoonist from Wilmington. Hal uses a few bold strokes of the pen to capture the humor and pathos inherent in every sportsman.

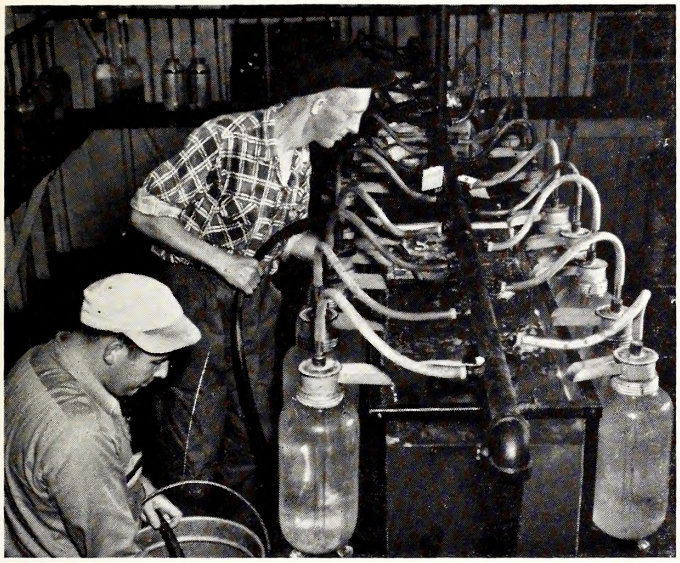
Dale Ham, Lansing, N. C. writes:

"I would like information on raising the hunting license (fee) and putting a bounty on foxes.

"I live in Ashe County, and the foxes are so thick that they are eating all the game up. Seems to me you are overlooking the main thing that is destroying the game, particularly in this county. Ninety percent of the people here are in favor of anything that can be done concerning this."

The county system of predator control here or in any other state has never had any practical effect on predatory animals, and has in addition been an administrative and financial headache. Progressive states, including

ROCKFISH HATCHERY



The N. C. Wildlife Resources Commission is again operating the only striped bass hatchery in the world at Weldon, N. C. Shown here is a battery of hatching jars where more than 8,000,000 striped bass were hatched last year.

North Carolina, long ago gave up the bounty as a means of predator control. Placing a bounty on foxes would, to state it mildly, incur the wrath of thousands of sportsmen who consider the fox a desirable game animal. An increase in license fees would necessitate an act of the Legislature.

Bill Joyner, Rocky Mount sportsman, conservationist, and sporting goods dealer liked the February issue of WILDLIFE and ". . . would like to suggest a collection of possum rhymes (See COVER, Feb. '54 issue). I remember some from my childhood and there must be hundreds of variations that would be interesting to gather together. Here are three: 'Possum up a 'simmon tree, eating all the 'simmons he can see. Comes down on the ground and eat 'em all around,' and: 'Possum up a 'simmon tree, sweet potatoes on the vine. Put 'em all together makes the eatin' mighty fine.' Another: 'Raccoon got a bushy tail, possum's tail is bare. Rabbit, he come skippin' by, he ain't got none to spare.'"

Anybody know any more poetry or variations on the marsupial theme? Send them in and we will be glad to publish them. Incidentally, the little jingle in the February issue was dreamed up for the occasion, is not authentic Tar Heel folklore.

For Marvin Harper of La Grange, the age old question, "How much wood would a wood chuck chuck if a wood chuck would chuck wood?" is a closed issue. He has found the solution:

"I read WILDLIFE from cover to cover each month and enjoy it very much. I especially enjoyed Mr. Edward Ray Smith's article on the ground hog or wood chuck. However, when asked the question (How much wood . . .) I started wondering if a wood chuck chucked wood, and if so, how much could he chuck.

"I have contacted several old timers who are familiar with the habits of the wood chuck, and they all agree that they chuck a small amount of wood when they dig their tunnels. But only one attempted to figure out the amount, and he gave the following method of solving the problem. He said, take the amount of wood three wood chucks would chuck and divide by three."

Barber Shop Argument

This question comes from Arthur Northcutt, of Dunn, more about Br'er Possum. Poor possum won't have any privacy left, it seems.

"Dear Sir:

"There was quite an arugment this morning in the Cotton Dale barber shop about nature's moron, Br'er possum. We would like for you to explain to us in detail how possums produce. It seems there are four or five different opinions on this.

"We here in Dunn get quite a kick out of WILDLIFE IN NORTH CAROLINA and think it is a mighty fine magazine."

We can't print all the details because of lack of space. In general, reproduction of the opossum is like that of other mammals. Gestation period is extremely short, only about eleven and one-half days. When the embryonic young are born, the mother forms a saliva slick from the birth canal to the abdominal pouch where the young attach firmly to nipples and development progresses. The transfer to the pouch give rise to varied theories that opossums are "different" in reproductive phenomena.

Philip Paquet of McLeansville offers this outdoor ode, and we are happy to pass it along:

My Woodland Friends

I wish I could write like a master,
And in words of a poet reveal
The beauty I find all around me
And the love for the wild life I feel.
The little lakes, crystal and quiet,
The streams that go scrambling along
Each has for me something distinctive . . .
Its own sweet, particular song.

The trees in their beautiful colors
Bear their noble heads royally high.
While with their slim delicate fingers
They reach up to beckon the sky.
My feathery friends are all singing.
Below them the furry ones play;
There is nothing to mar their contentment,
Or mine, as I watch them today.

Friend, if you are sad or unhappy,
Come out to the woods with your care;
You'll find us all carefree and peaceful
And ready our pleasures to share.
And as the bright forest enfolds you,
As you visit its folks for a day,
You'll find that your troubles will vanish
Blown, like the light woodsmoke away.

PROTECTOR OF THE MONTH

H. R. McLean

A veteran of World War I, having served in France with the famous 81st Wildcat Division, Mr. H. R. (Hooch) McLean is likewise a veteran game law enforcement officer with an uninterrupted record of service going back to 1926 when he was first employed in this capacity by the Hoke County Commissioners. Prior to that time he was a baseball player, first as a member of the team at Guilford College, later playing professional ball from Florida to Wyoming.

While Mr. McLean admits that his greatest thrill comes with the apprehension of a night deer hunter, he vividly recalls many other unusual experiences. He once chased a violator into a house and retrieved him intact from the owner's bed, shoes and hat still on. On another occasion, while checking a deer hunt, he shook a dead man and asked to check his license. The apparently sleeping hunter had suffered a fatal heart attack.

Mr. McLean is an elder in the Raeford Presbyterian Church. He and his wife, the former Sadie Culbreth of Waycross, Georgia, have three daughters: Betty, an area worker of the Fayetteville Presbytery; Mary, a sophomore at Flora Macdonald College; and Hazel, a senior at Hoke County High School.

Enforcement Record For January

Persons checked	36,917
Prosecutions	368
Convictions	330

A total of $3,266.00 in fines was collected and paid into the school funds of the counties in which the convictions were obtained. Fines were not collected, being either suspended or not levied, in 35.45% of the total number of convictions.

It's The Law!

Question: Is a person required to have a Special Trout License to fish for trout with natural bait in the county of his residence?

Answer: (1) The new trout license law, which went into effect on January 1, 1954, requires a Special Trout License before fishing in waters which are stocked at public expense and are designated as Public Mountain Trout Waters by the Wildlife Resources Commission.

(2) A Special Trout License is not required for fishing for trout in waters which have not been so designated.

(3) Neither the Special Trout License nor the ordinary fishing license is required for persons under 16 years of age to fish in any waters, whether designated as trout waters or not.

(4) A landowner and minor members of his family may fish in any waters, designated as trout waters or not, which cross his own land without an ordinary fishing license or a Special Trout License.

(5) However, whereas a person may fish with natural bait in the county of his residence without the ordinary fishing license, if he is 16 years of age and is fishing in designated trout waters off his own land, he must have a Special Trout License regardless of the kind of bait used.

CONSERVATION DELEGATE

Photo by Luther Partin

Bobby Futrelle, Mt. Olive Freshman at State College, attended the Young Outdoor Americans Conference in Chicago last March as a guest of the Izaak Walton League of America. Futrelle is State President of the Future Farmers of America.

At a recent meeting in Raleigh the Wildlife Resources Commission reelected its officers to serve another year. Shown here in official session are (L. to R.) Orville Woodhouse, Grandy; Robert Sadler, Bayboro; Charles T. Wilson, Biltmore; G. E. Beal, Red Oak; H. C. Kennett, Durham, Vice Chairman; R. Floyd Crouse, Sparta, Chairman; Clyde P. Patton, Raleigh, Executive Director; Thurman Briggs, Lexington; James A. Connelly, Morganton, and E. D. McGougan, Lumber Bridge, Secretary.

SUCCESS

from page 14

Visit the McFaddens and all capital letters spell VARIETY on the farm now. On the hillside, Dan's flock of sheep may be seen, in another direction a milch cow grazes along with beef cattle, domestic geese lazily mull around, chickens make themselves busy, bees are in the hives, a nice saddle horse gazes at strangers. Then there are fish in the ponds, a great variety of songbirds fill the surroundings, and wild game birds are often seen or heard. Dan hopes his quail, rabbits and other small game are going to use his bicolor and sericia area for "room and board." And since the larger farmpond has good loafing grounds and aquatic food, migratory waterfowl have not entirely ignored it because the farm is almost adjacent to an artificial lake which contains 15,750 acres. A few fur-bearing animals inhabit the farm also.

Besides visiting, an invitation for dinner may be extended and from the deep freeze, that was produced on the built-up farm, a choice of the following could be had: lamb chops, T-bone steak or sirloin, chicken to fry or bake, roast goose, frozen fish, frozen vegetables and frozen fruits and berries. For special dessert Sue's strawberries could be made into shortcake with gobs of whipped cream. ALL FROM THE SOIL, not forgetting the honey.

After the visit and dinner, fishing and swimming can be enjoyed because the fish are faring fine and the water clean because the soil is on the slopes, held back by the grass roots instead of becoming silt in the ponds. Fishing is always encouraged because Dan has learned that his pond can hardly be overfished. If horseback riding is preferred, the horse is ready to go.

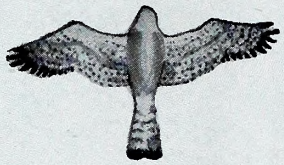
How is all this possible? INTEREST, COOPERATION, AND CONSERVATION.

Suppose no one is at home when a visit is made, the reception committee is one. A beautiful collie dog with a wag of his tail and an effectionate whine will greet you lovingly. Do you agree with the family slogan, "We may not get rich, but we can *live like millionaires on a farm?*" I agree because the *principle* of good conservation never fails to pay dividends.

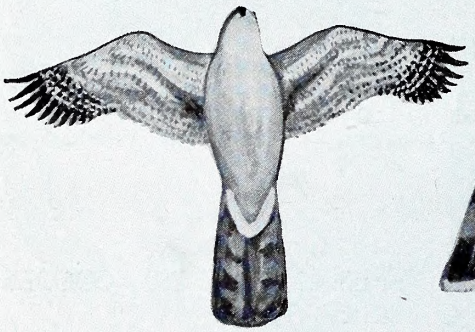
Photo by Luther Partin

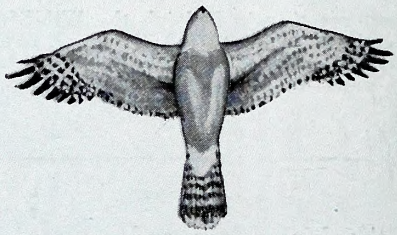
Executive Director Clyde P. Patton signs Wildlife Guide cards for a group of Scouts who have taken on wildlife conservation projects as work toward merit badges. Thousands of these cards are being issued to scouts throughout the state as special recognition of the work they are doing in wildlife conservation.

Only two hawks common to North Carolina are specifically listed as "unprotected." These are the Sharpshinned (center) and the Coopers (lower right). The Goshawk (pronounced goss-hawk), is a rare visitor to the state and is under protection by law. Sometimes called blue darters, these hawks are swift flying and rarely are seen in the open. They capture their prey by swift flight, and by killing small birds, game, and poultry, have indirectly brought about the death of many valuable hawks of the soaring variety.

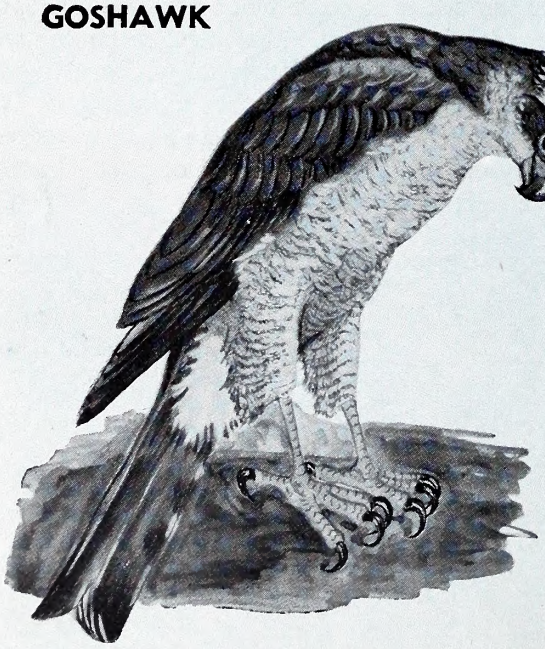


SHARPSHINNED

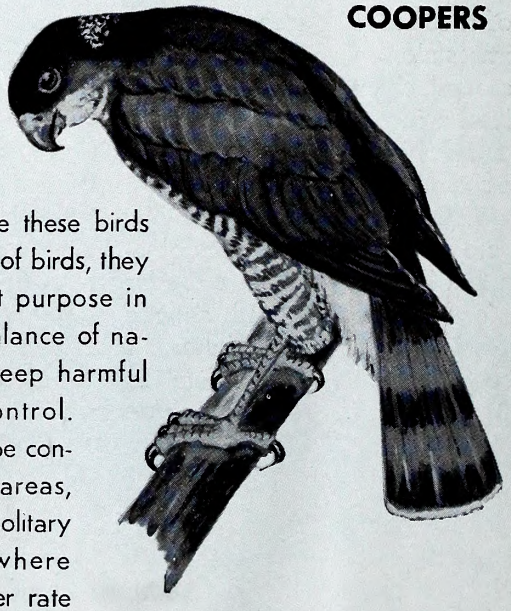




GOSHAWK



COOPERS



Despite the damage these birds do to other species of birds, they serve an important purpose in maintaining the balance of nature, helping to keep harmful rodents under control. They may need to be controlled in certain areas, but since they are solitary in habit and nowhere abundant they never rate wanton persecution.

Win Donat

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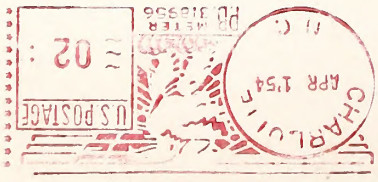

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Wildlife
IN NORTH CAROLINA

TEN CENTS MAY • 1954

Photo by Jack Dermid

Leaf for a Canopy

Let the spring rains fall! This wood thrush family has ample protection under the heavy leaf of a blackjack oak. The nesting season is at a peak during May, and everywhere the outdoors is bustling with activity.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

WILLIAM B. UMSTEAD
Governor

North Carolina Wildlife Resources Commission

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COVER

Win Donat portrays a crow sentry at its lookout post high above a cornfield. If danger approaches the sentry's alarm will send the feeding flock scurrying for safety. See page four for an article about crows.

☆ ☆ ☆

EDITORIAL STAFF

Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Anne Taylor ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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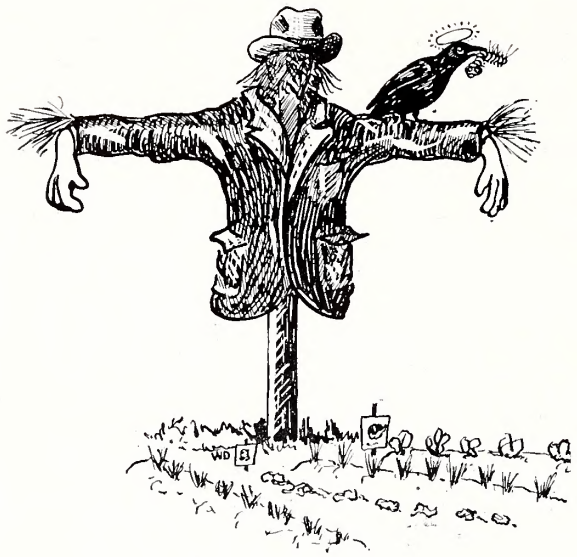


THE EASTERN Crow

Sinner or Saint, You Have to Admire This Smart Bird

by Rod Amundson

Reprinted by Request

History

A thief, a scoundrel, pirate, marauder, scavenger, raucous-voiced despoiler of duck nests—these are but a few of the printable adjectives ascribed to the crow. He is a clown, a mimic, a tormentor, and a tender, loving parent. In addition to this and more, he is one of the smartest of birds, ranking high in intelligence and physical development. One of the most universally hated and persecuted of birds, the crow has followed mankind throughout the limits of agriculture in the temperate zone, and has held his own in number despite massed gunfire, bombing, and poison.

One cannot help admiring such a bird even though it steals corn, chickens, robs birds nests, then sits at a safe distance in a tree top and literally laughs at the whole affair. Farmers hate crows. Sportsmen pretend to, but if crows were ever reduced to danger of extinction, you would hear a loud outcry from crow hunters for the protection of a favorite sport. Here is an indication of such a trend toward the conservation of crows.

Near the town of Hastings, Nebraska, is a tract of woodland which has become famous as a mass roosting place of crows during the cold winter months. Estimates of the number of crows frequenting the rookery have ranged up to half a million birds. Soon after the war, when shotgun ammunition again became plentiful, hundreds of sportsmen made nocturnal raids on the roosts, killing crows by the thousands. Everyone had a good time until the crows began avoiding the woodland tract and looking for new places to roost. Then, by a gentlemen's agreement, the crow shooters decided to no longer invade the crow roost. Instead they agreed to do their shooting in the twilight hours as the crows flew into the roost from the surrounding countryside. Those crow hunters wanted to preserve their sport. There was some talk of a bag limit, but this was never accomplished.

North Carolina has three types of crows: the common eastern crow, which ranges from the coastal plains through the mountains, the fish crow, a smaller species, which is confined to the coastal margains, and the raven found only in the mountains.

Crows have close relatives throughout the northern hemisphere. The English variety is the raven, a larger bird than any North American species. Crows extend throughout Europe through Siberia, and northern Asiatic lands. Everywhere they are unwanted and persecuted. Old Henry VIII of England placed a bounty on crows and crow-like birds. The oldest commonly known reference to the crow is in the Bible, a reference to the ravens bringing food to an Old Testament prophet.

Characteristics

The common eastern crow is a relatively large bird, being about 20 inches long, with a corresponding wingspread. The general appearance is a solid black, although in the winter plumage the black becomes iridescent violet over the wings and on the neck feathers. After the breeding season is over, the birds go through a complete moult, thus renewing the black and iridescent plumage from the worn, brownish hues of the summer.

To call the voice of crows a song would be taxing the most elastic imagination. Crows do, however, have a repertory of utterances which may vary with the situation. In flight the call is a simple, harsh "caw, caw, caw." But let a number of crows encounter a fox or a tomcat in the woods, and a clamor of caws, shrieks, and cries is set up which can completely un-nerve the harried animal. Hawks and owls are arch-enemies of crows, and any encounter between the two kinds of birds is sure to bring on a chorus of avian profanity.

Many books have been written about the community life of crows. All give the birds credit for a great deal

(Photo courtesy U. S. Fish and Wildlife Service.)

The eastern crow is the most numerous of the crow family. Crows are found throughout most of North America and the northern part of Europe and Asia. Everywhere they are considered pests.

of intelligence. For example, while a flock of crows help themselves to sprouting corn in a farmer's field, one member of the flock is left on sentinel duty. At the approach of danger, the sentinel sets up a fuss that can be heard for miles. The flock then heads for the tall, deep woods.

Many a hunter will give his word that crows recognize guns when they see them, and there is considerable evidence to bear out this belief. You can ride on a piece of farm machinery all day, without a gun, and have crows come within a few feet of the cultivator to pick up insects and grubs. But take a gun along for the purpose of shooting a crow, and the birds will either leave the field or stay just out of gun range.

But crow intelligence is far from infallible. Hunters go out to a thicket or a prefabricated blind and call crows in to the gun until they are tired of shooting. A number of good artificial crow calls are on the market, and may be used with considerable success. Some crow hunters call the birds vocally. Either method can be hugely successful.

As Pets

Many a crow has been raised in captivity, to the delight and consternation of its benefactors. Young birds taken from the nest can be easily raised on nearly any food from the kitchen table. They seem to forget their ancestory, and will almost entirely ignore their wild cousins. But the person who takes on a crow for a pet is letting himself in for plenty of trouble. Crows are congenital thieves, and no object about the place is safe from the pet crow if it can be picked up and flown away with. Many a housewife has searched in vain for thimbles, scissors, hair ribbons, and a variety of bric-abrac, only to learn that the crow has carried it off and hidden it.

If there is a pet cat or dog in the household, it might be well for the animal to make friends with the crow. Otherwise, it is in for a life of calculated torture. The daily life of a pet crow can be described in three words: eating, sleeping, and tormenting.

Because of their versatile voices, pet crows easily learn to say simple words. This, incidentally, can be accomplished without the cruel practice of splitting their tongues.

Breeding

Despite all of the invectives heaped upon them, crows do an admirably conscientious job of rearing their young. Their domestic life is peaceful, and the devotion of parent birds to each other and to their young is remarkable.

Mating begins with a period of courtship during which several males seek the favor of a female. At this time the males do considerable showing off in aerial acrobatics and in sounding love calls. The latter is definitely unattractive to the human ear, but apparently it serves the purpose for which it is intended among crows. Once a successful suitor has been selected, the pair drive off rivals and set about the task of housekeeping.

(Photo courtesy U. S. Fish and Wildlife Service.)

Two fully feathered young crows on the nest. They set up a continuous clamor for food.

(Photo courtesy U. S. Fish and Wildlife Service.)
Even when they are fully feathered young crows demand food from their parents. This one has ventured from its nest.

Crows construct elaborate nests, although they will sometimes take over the abandoned nests of squirrels or hawks. The nests are made of rather heavy twigs which are piled on top of each other until a considerable pile has been amassed. Much attention is given to lining the nest with dead leaves or tufts of cotton, twine, old rags, moss, or any other soft material. Altogether, the nest is substantial and warm.

From four to six greenish-gray, blotched, spotted, or mottled eggs are laid in the nest cavity. Occasionally two females share the same nest, and may put in as many as a dozen eggs. The incubation period is 18 days. The youngsters are particularly unlovely, being a semi-naked pinkish color with an indifferent array of gray down. Pinfeathers soon appear on the wings and tail, and in a very short time the fledglings are entirely feathered.

As soon as the young crows are old enough to take food, they set up a terrific clamor to obtain it. They never seem to get enough. The hunger cry is an oft-repeated, dry squawk, with a falling inflection. The din increases as the hard-working parents approach the nest with food, and continues in subdued choking, gobbling sounds as the food goes down. Young crows require about half their weight in food each day, and as they approach maturity, this imposes a heavy tax on the energies of their parents.

At the age of five weeks young crows are developed enough to make trial flights, but their demand for parental care goes on after they have learned to fly from tree to tree.

Food Habits

It is the food habits of crows that get them into trouble. They incur the ire of farmers by stealing baby chicks, growing corn, and corn in the milk stage. In the nesting grounds of ducks and geese, crows destroy countless eggs, and thus arouse the wrath of sportsmen. Where crows find quail and pheasants nests, they will eat the eggs. They have been known to plunder nests of new-born cottontails.

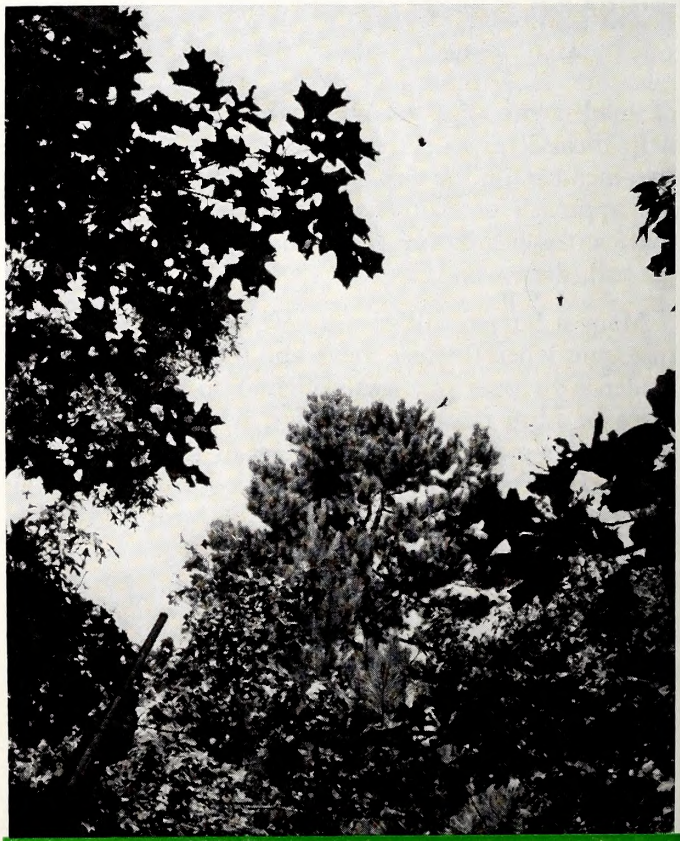
There are many items in the diet of crows which can be put on the credit side of the ledger. They eat an almost endless variety of worms, grubs, beetles, and other insects and insect larvae. About three-fourths of their diet is vegetable matter, and one-fourth animal material. In many localities where buzzards are not present to assume the responsibility for removing carrion, crows perform the service nicely. They take a few live animals such as field mice or immature cotton rats, but such occurrences are rare.

Enemies

Crows have a number of enemies besides man. Hawks and owls wage constant war on crows, and their nests may be plundered by red squirrels. Little is known regarding infections by diseases or parasites.

Migration

Although crows migrate with nothing like the spectacular flight of waterfowl, there is a definite seasonal north-south movement. They leave the northern extremity of their nesting grounds in the fall and migrate southward, to return again in the spring. It is during

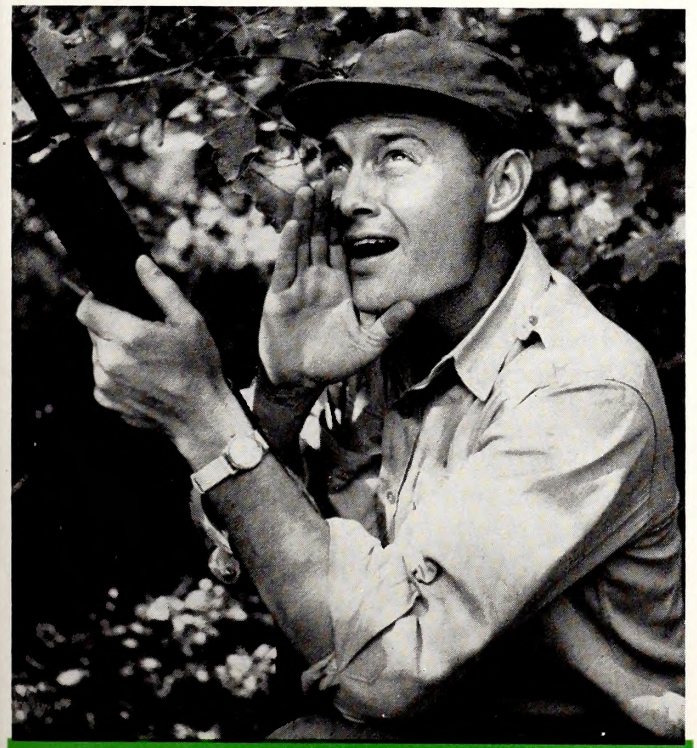


Get set for some fast wing shooting when a mob of angry crows move in over the blind. Here one black rascal tumbles downward, while three others make good their escape.

their winter visitation that they gang up in huge rookeries. The rookeries, or roosts, are strictly a night-time proposition. Toward sunset they may be seen wheeling in for miles to the roosting spot. In some of the mid-western roosting areas, the evening flight of crows from all directions to the rookery must be seen to be appreciated. Gunners who place themselves in concealment close to the roosts get in some fine pass shooting. Early in the morning the birds spread out from the rookery like spokes in a wheel. They have been followed as far as forty miles in their daily migration to seek food. During the winter aggregation period crows seem to get a sense of safety in numbers. They invade small towns, alight on peoples' lawns, and raid back-yard garbage cans. Newspapers (in the midwest) have run pictures of crows taking food from dogs' feed pans, the dogs apparently having given up trying to keep the raiders away.

Control

In many states, where huge concentrations of crows gather in roosts, sportsmen and conservation officials stage crow-bombing campaigns which take a heavy toll of crows. Small bombs are made from half-sticks of dynamite surrounded by buckshot or coarse gravel in cardboard or metal containers. The bombs are placed in low trees where the crows gather so thickly that branches break under their weight. The bombs are connected by prima-cord, a World War II development which looks like a small clothesline rope, and which explodes along its entire length with terrific force. The prima-cord explodes all the bombs at once, and every crow within several feet of the bombs may be killed.



Many hunters make effective use of crow calls to lure birds within range, but Paul "Baldy" Harris of Roanoke Rapids finds talking the crow language even better.

Ralph Andrews of Raleigh with a handful of Tar Heel crows bagged on a recent hunt.

Another device being tested is a shotgun version of the light mortars used by infantry troops. A heavy piece of gas pipe, or a steel post driver, is set up on a simple frame so that the closed end rests on the ground and the open end is aimed at a tree full of crows. The device acts like an old fashioned muzzle-loader, with a charge of powder, wadding, several handfuls of number six shot. The charge may be detonated electrically, and if the crow motor is properly aimed, several hundreds may be killed in a single firing. It should be pointed out that such devices are extremely dangerous if improperly handled, and in every case should be fired from a safe distance.

No thinking person would want to see crows completely exterminated, but all agree that they must be kept under control. Hunters can shoot them all they please, and pest-control experts can dynamite them to their heart's content (special permit required in North Carolina), but like flies, taxes, and the indigent, crows will always be with us—to be cussed or praised, as the case may be.

Book Review: THE FISHERMAN'S HANDBOOK, Fishermans Press, Inc., Oxford, Ohio, Price $1.00.

A whole evening will be required to scan this book from cover to cover, and if the reader is an angler, time will fly. It is a compact source of useful information, including know-how and how-to articles, new developments in fishing tackle, and new methods of fooling almost every species in North America.

Where to go, how fish live, baits, boats, motors . . . the list is almost endless. Illustrations include photographs, sketches, and diagrams. There are old ideas for the novice angler and new ideas for the old timer.

Duane Raver.

Winners of the

1954 Wildlife Quiz Contest

SPONSORED JOINTLY BY THE
NORTH CAROLINA WILDLIFE FEDERATION
AND THE
NORTH CAROLINA WILDLIFE RESOURCES
COMMISSION

Over 5,000 contestants made a bid for honors in this year's contest. The judges, composed of students and faculty members of N. C. State College, spent a total of 100 man-hours before awarding first place honors to Miss Emma Thompson, a 17-year-old sophomore at Jones Central High School, Pollocksville, N. C. Emma made a perfect score on the Wildlife Quiz and submitted an outstanding essay which placed her at the head of a field of close competition.

The contest began February 1, 1954, when teachers gave pupils desiring to participate a sheet containing ten questions concerning wildlife. The contestants answered the questions and wrote an essay of 500 words or less on the topic, "What I Can Do To Conserve The Soils, Forests, Waters and Wildlife In My Community." Dr. Fred S. Barkalow, head of the Zoology Department at N. C. State College, supervised the judging of the entries. A group of seniors, majoring in Wildlife Management, selected the best entries, based on number of questions answered correctly and neatness of the papers. The neatest papers in all cases had the most correct answers. There were about 200 papers that were given a high grade for neatness—none of these had more than one incorrect answer. The papers having a lower neatness grade also had more wrong answers.

Out of the 200 best entries, 30 were selected for the essay judging by another group made up of ten graduate students and faculty members. The names were removed from the essays which were then numbered at random from 1 to 30. The judges each drew nine of the essay numbers at random, which means that each essay was read three times by three different judges. Each judge scored each essay on his own score card—the lowest possible score zero; the highest possible score 100. The essays were judged for practicality, accuracy and originality of thought and presentation. All grades were then turned over to the Department of Experimental Statistics where the scores were compared and adjusted by a grading machine, and the order from first place to thirtieth place was determined. This final grading process was supervised by Dr. A. L. Finkner, Dr. R. L. Anderson and graduate student R. Morrison, all members of the Experimental Statistics Department.

It should be evident that every effort was made to see that the entries were judged fairly. None of the judges knew any of the contestants and entries were identified by a number to remove the possibility of anyone unconsciously becoming biased. The final scores were determined by a machine, and only then did anyone know the winner.

Here are the top ten contestants and their addresses, teachers and schools:

Name	*Address*	*Grade*	*School*	*Teacher*
Emma Thompson	Route 1, Pollocksville	10th	Jones Central High	Mrs. Nellie Wells
Peggy Sawyer	Box 25, Route 1, Bath	8th	Bath High	Mrs. Vera G. Oden
Jan Everett	2605 University Dr., Durham	9th	Carr Jr. High	H. B. Nelson
Susan Abernethy	618 Roslyn Rd., Winston-Salem	8th	Reynolds High	Mrs. Josephine Fitts
Jean Clary	Children's Home, Winston-Salem	8th	Reynolds High	Mrs. Josephine Fitts
Monroe McClure	Route 5, Franklin	10th	Franklin	Mrs. Mildred R. Martin
Dyane Price	Route 3, Rocky Mount	8th	Red Oak	Mrs. Virginia May
Jerry Sanders Harris	331 N. Harvey St., Washington	10th	Washington High	Mrs. Joyce Bagley Ayers
Camelia Ann Stewart	Coats	10th	Coats High	Mr. R. W. Coon
Pat Sink	Route 1, Clemmons	8th	Lewisville	Mrs. Grace Kelly

HOW FISH ARE IDENTIFIED

Part II

by Duane Raver

Sketches by the Author

Fish, like most living things, are classified in orderly groups, and they all fit nicely into their special categories. Each fish has a scientific name and often several common names, and each fish can be identified and named precisely by using a rather technical device called a "key." First of all, do not be dismayed at this rather complicated appearing puzzle. By using a fish that you already know and following it through the key, you will see how the placement unfolds from item to item and soon falls into the right place. The use of technical terms is almost unavoidable in scientific keys. When such terms appear, it may be necessary to refer to the first part of "How Fish Are Identified" in *Wildlife In North Carolina* for April. A short list of words and their meanings is available for reference.

The "Family Key" is used to find the family to which the species in question belongs. For example, the trout family, SALMONIDAE, or the catfish family, AMEIURIDAE. Once we narrow the question of identity to this grouping, we are ready to pick out the precise fish from a selection of two or several fish in the family. In the case of the gars and bowfins, we have only one fish listed under each of these families, making selection simple; however, in the case of the sunfish, thirteen species are included.

Selection of one individual from a family group can usually be done using either a description or a picture showing a distinctive characteristic. Thus, you will find many (not all) of the species found in North Carolina listed under their respective families, along with one or several distinguishing characteristics. Where possible, a sketch of a classifying feature also is shown. By reading the descriptions of the fish listed and comparing the sketches with the fish in question, you will arrive at the correct identification.

A final check on the correctness of your findings may be obtained from a text on fishes by reading their complete descriptions or by asking a more experienced fisherman. Use the location where the catch was made, size, and even the method of capture in your identification. You may find fish identification very interesting and worth further study.

A Key to the Families of North Carolina Fishes

1A. Tail rounded or unsymmetrical 2

1B. Tail forked or slightly so; symmetrical 3

2A. Body covered with diamond-shaped plate-like scales; nose beak-like: **LEPISOSTEIDAE**, the Gars.

2B. Body with cycloid scales; head rounded: **AMIIDAE**, the Bowfins.

3A. Dorsal fin with more than one spine; pelvic fin without a spine 4

3B. Dorsal fin with more than one spine; pelvic fin with a spine 10

4A. Chin with barbels; body scaleless: **AMEIURIDAE**, the Catfish.

4B. Chin without barbels; body with scales 5

5A. Gill-slits extended far forward below; gill-membranes free from isthmus 6

5B. Gill-slits not extended far forward below; gill-membranes united to isthmus 9

6A. No adipose fin developed 7

6B. Adipose fin developed: **SALMONIDAE**, the Trout.

7A. Belly with strong scales forming a sharp keel: **CLUPEIDAE**, the Shad and Herring.

7B. Belly without a sharp keel 8

8A. Front of head shaped like a duck's bill; head scaled: **ESOCIDAE**, the Pickerel.

8B. Front of head not shaped like a duck's bill; no scales on head: **HIODONTIDAE**, the Mooneyes.

9A. Mouth fitted for sucking; pharyngeal teeth numerous: **CATOSTOMIDAE**, the Suckers.

9B. Mouth not fitted for sucking (may be inferior); pharyngeal teeth fewer than nine on each side: **CYPRINIDAE**, the Minnows.

10A. Dorsal fin single (almost separated in largemouth bass): **CENTRARCHIDAE**, the Sunfish and Black Bass.

10B. Dorsal fins—2, separated or but slightly joined .. 11

11A. Anal spines—3: **SERRANIDAE**, the Sea Bass.

11B. Anal spines—1 or 2: **PERCIDAE**, the Perches.

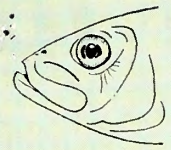
See Next Page for Guide to the Species.

Terms and Their Meanings

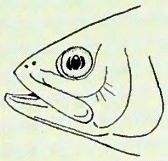
Anterior	Forward, toward the head end.
Barbel	A flexible feeler-like organ on the head of certain fish, containing sensory organs.
Isthmus	That portion in the throat region of a fish directly behind the chin area.
Keel	The mid-line of the belly of a fish. May be sharp, formed by scales like the peak of a roof.
Posterior	Behind, toward the tail end.
Ray	Rods or fibers supporting the membranous portion of a fin, may be either bony (spinous rays) or cartilaginous (soft rays).

FAMILY CLUPEIDAE: Shad and Herrings

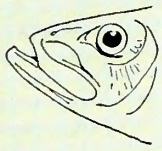
ALEWIFE (Pomolobus pseudohorengus)
Mouth small with lower jaw not greatly longer than upper. Upper jaw not notched. Scales in lateral series: 50.



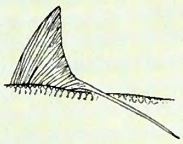
AMERICAN SHAD (Aloso sopidissimo)
Upper jaw notched. Scales in lateral series: 60-65.



HICKORY SHAD (Pomolobus mediocris)
Lower jaw much longer than upper.

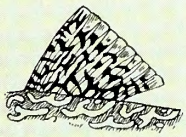


GIZZARD SHAD (Dorosomo cepedianum)
Posterior extension of dorsal fin greatly elongated. Fresh water only.

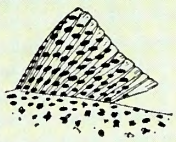


FAMILY SALMONIDAE: Trout and Salmon

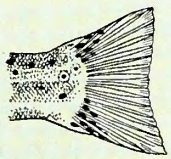
BROOK TROUT (Salvelinus fontinolis)
Dorsal fin and back mottled with olive, worm-like marks. Ventral fins edged in white.



RAINBOW TROUT (Solmo goirdnerii)
Dorsal fin and back spotted. Tail heavily spotted. Side pink or red.

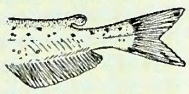


BROWN TROUT (Solmo trutto)
Body chocolate brown to olive-yellow. Tail with few spots. Body spots with light "halo."

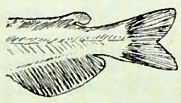


FAMILY AMEIURIDAE: Catfishes

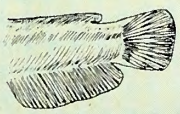
CHANNEL CATFISH (Ictolurus locustris)
Tail deeply forked. Body of specimens under 2 pounds, steel gray with dark spots. Rays in anal fin: 25-29.



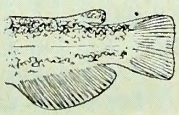
WHITE CATFISH (Ictolurus catus)
Tail forked. No spots on body. Rays in anal fin: 19-21.



YELLOW BULLHEAD (Ameiurus notolis)
Tail square—not forked. Color—olive yellow. Chin barbels—white or cream. Anal rays: 24-27.

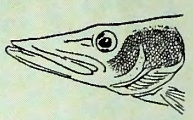


BROWN BULLHEAD (Ameiurus nebulasus)
Tail not forked. Anal rays: 17-22. Chin barbels gray or brown.

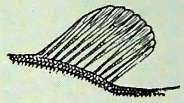


FAMILY ESOCIDAE: Pickerels

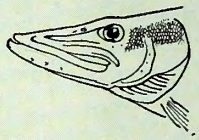
CHAIN PICKEREL (Esox niger)
Cheek and opercle scaled. Rays in dorsal fin —usually 14. Chain-like markings on body. Size—up to 8 pounds.



REDFIN PICKEREL (Esox omericonus)
Cheek and opercle scaled. Rays in dorsal fin — 11-12. Body with vertical bars. Size — rarely over 11 or 12 inches.



MUSKELLUNGE (Esox masquinongy ohioensis)
Lower half of cheek and opercle without scales. Size from 10 to 20 pounds. Not common.

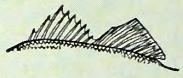


FAMILY SERRANIDAE: Sea Basses

STRIPED BASS (Roccus soxotilis)
Spinous and soft dorsal fins separate. Base of tongue with teeth. Body with rows of spots forming stripes. Coastal rivers and sounds only. Size—up to 50 pounds.

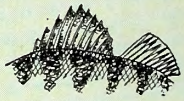
WHITE BASS (Lepibemo chrysops)
Spinous and soft dorsal fins separate. Bose of tongue with teeth. Body striped. Inland waters. Size—up to 4¾ pounds.

WHITE PERCH (Morone omericono)
Spinous and soft dorsal fins connected. Tongue without teeth. Body only faintly striped. Mostly coastal. Size—up to 2½ pounds.

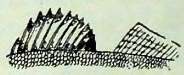


FAMILY PERCIDAE: Perches

YELLOW PERCH (Perca flavescens)
Spinous dorsal fin sooty, without posterior spot. Teeth weak, not canine. Body with dark, broad vertical bands.

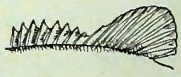


WALLEYED PIKE (Stizostedion vitreum)
Spinous dorsal with dark spot at posterior base. Teeth strongly developed. Body with faint blotches. Ventral lobe of tail with white spot.

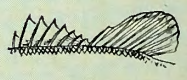


FAMILY CENTRARCHIDAE: Sunfish and Black Bass

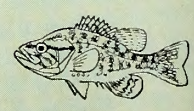
SMALLMOUTH BASS (Micropterus dolomieu)
Dorsal fin without deep notch between spinous and soft portions. Scales small, with cheek scales in 14 to 18 rows. Upper jaw extending only to posterior edge of eye pupil.



LARGEMOUTH BASS (Micropterus solmoides)
Spinous and soft dorsal fins almost completely disconnected. Scales large, with cheek scales in 9 to 12 rows. Upper jaw extending beyond posterior margin of eye.



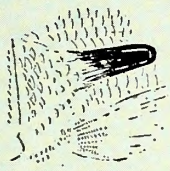
WARMOUTH (Choenobryttus coronorius)
Mouth large, tongue with teeth. Body mottled with yellow-olive and purples. Opercular flap poorly developed. 3 anal spines.



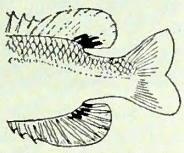
A Guide To Fish Identification

Use the family key on page 9 to determine which family your fish belongs to. Then, with the help of these descriptions and sketches, it will be easy to find the correct name of the species.

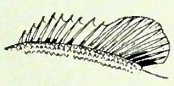
REDBREAST (Lepomis ouritus)
Mouth large, no teeth on tongue. Body with faint vertical bars. Breast orange. Opercular flap long, narrow.



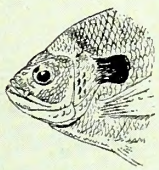
GREEN SUNFISH (Lepomis cyonellus)
Mouth large, no opercular flap. Blue lines on cheek. Dark spot at posterior base of anal and soft dorsal fins.



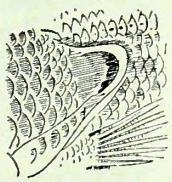
COMMON BLUEGILL (Lepomis mocrochirus mocrochirus)
Mouth small. Dark spot at base of posterior portion of soft dorsal fin. Opercular flap rounded and dark blue or black. Body with vertical bars.



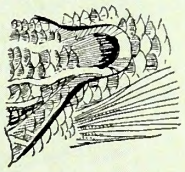
SOUTHEASTERN BLUEGILL (L. macrochirus purpurescens)
Body as above except larger opercular flap. Color—dark purple or bronze. Males with copper-colored band across forehead.



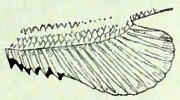
REDEAR SUNFISH (Lepomis microlophus)
Opercular flap firm with posterior border pink or buff. Pectoral fin long, pointed. Coloration not bright.



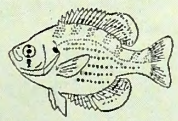
PUMPKINSEED (Lepomis gibbosus)
Opercular flap firm with red or orange spot. Cheeks with bluish streaks. Coloration bright, with golden underparts.



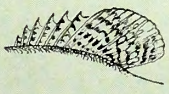
ROCK BASS (Ambloplites rupestris)
Dorsal spines 11 or 12. Anal spines 6. Mottled, with bronze spots forming lateral rows below lateral line. Western N. C.



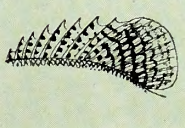
FLIER (Centrorchus mocropterus)
Dorsal spines 11 to 13. Anal spines 7 or 8. Bronze-green color with spots forming lateral rows. Body shape rounding. Eastern N. C.



WHITE CRAPPIE (Pomoxis onnularis)
Dorsal spines 5 or 6. Body more elongate with dark markings forming vertical bars. May be light or dark in general color.

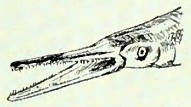


BLACK CRAPPIE (Promoxis nigro-maculotus)
Dorsal spines 7 or 8. Body robust with dark markings forming no pattern.



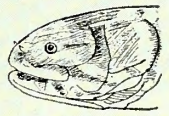
FAMILY LEPISOSTEIDAE: Gors

LONG-NOSED GAR (Lepisosteus osseus)
Diamond-shaped, plate-like scales. Nose beak-like, narrow, with many small teeth.



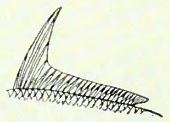
FAMILY AMIIDAE: Bowfins

BOWFIN (Amia calva)
Head rounded, body elongate. Continuous dorsal fin along two-thirds of back. Tail rounded. Gular plate under lower jaw.



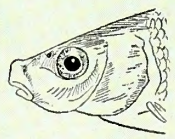
FAMILY CASTOSTOMIDAE: Suckers

LAKE QUILLBACK (Corpiodes cyprinus)
Mouth sucker-like. Dorsal fin very high and sail-like in front, tapering to narrow posteriorly. Scales large. High "shoulder."

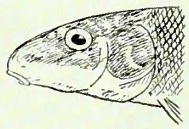


CHUBSUCKER (Erimyzon sucetto)
Mouth inferior, semi-sucker-like. Soft dorsal fin, narrow at base. Scales large. Body of sub-adults with distinct black stripe mid-laterally. Robust body.

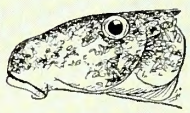
REDHORSE SUCKERS (Moxostomo sp.)
Sucker-like mouth, elongate body with small head. Medium large scales. Fins orange or reddish. Body golden or silver. Anal fin pointed.



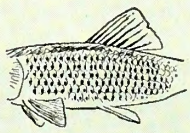
WHITE SUCKER (Cotostomus commersonnii)
Sucker-like mouth. Elongate body with small scales: more than 50 in lateral line. Color, entirely silver or dusky above, silver below.



HOG SUCKER (Hypentelium nigricons)
Large sucker mouth, large head with tapering body. Large pectoral fins. Body mottled with olive.

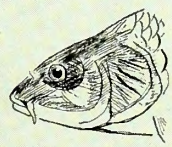


SPOTTED SUCKER (Minytremo melonops)
Body distinctly spotted, with each scale bearing spot. Body moderately robust. Color, dusky.

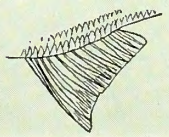


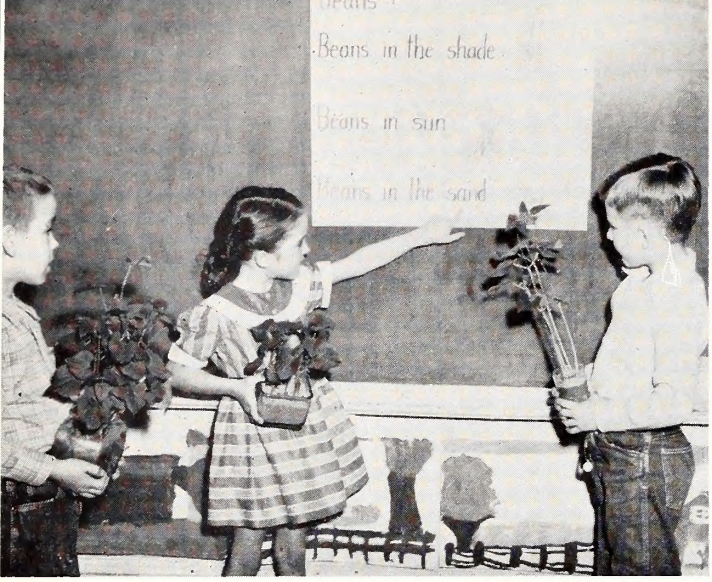
FAMILY CYPRINIDAE: Minnows

CARP (Cyprinus corpio)
Mouth inferior with barbels at corners. Large scales. Body with high shoulder, mostly olive to orange. Size—large, up to 20 pounds.



GOLDEN SHINER (Notemigonus crysoleucos)
Small mouth and rapidly tapering head. Lateral line decurved toward ventral area. Anal fin falcate. Size—up to 12 inches.





These students at Victory School are only in the first grade, but they have learned the value of good soil and the importance of sunshine in plant growth.

A science project at Lowell School took the form of a bird feeding area. Among other birds, two coveys of quail became permanent residents. Mr. Holbrook, the principal, his student helpers, and Miss McIntosh examine some milo.

Conservation In

by

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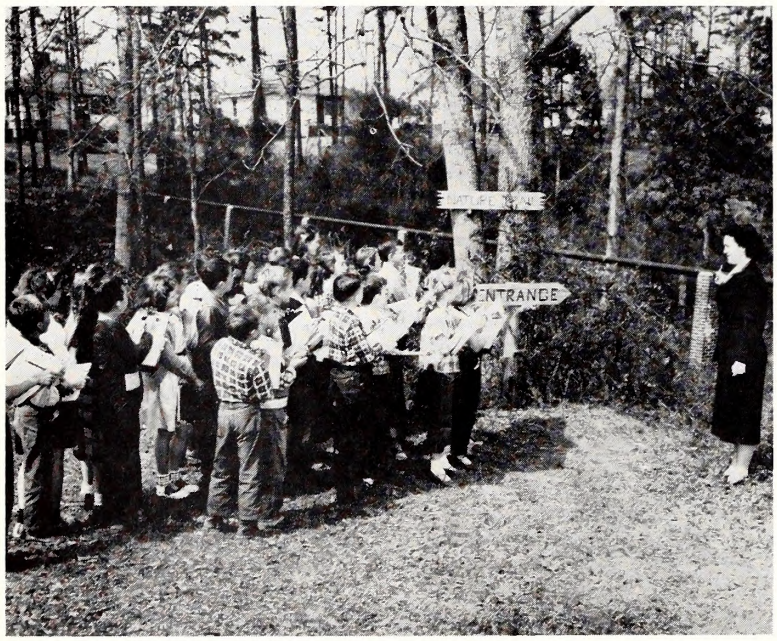
A problem which is becoming more serious with eac passing day is the conservation of our natural resource The teaching of conservation is useless unless th knowledge gained is put into practice. This knowledg is important to the person living in our towns, village or cities as well as to the person living in the rur areas.

One way to inform the public of effective measur to take in order to help solve this serious problem through education. More people can be contacte through the schools than through any other channel.

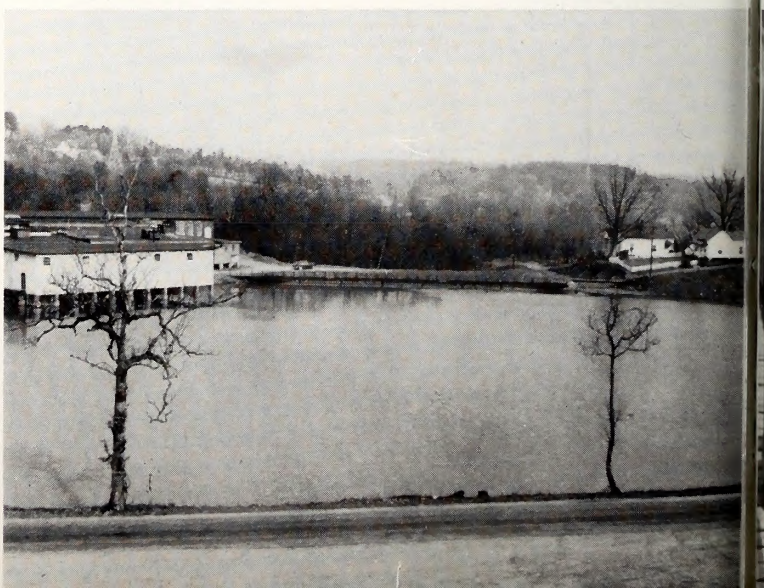
Most of the schools of Gaston county are in tow and mill villages. Increased interest in conservatio activities is being shown by all grades in the elementa school as well as in the high school science classe Many interesting activities have been engaged in durin



This Nature Trail at High Shoals School was built by the students. They can now study birds, animals, and plants as they are found in nature.

Students at Tryon School study lichens growing on a decaying log, found on a trip along their Nature Trail.

The beautiful pond below is in the center of McAdenville. Mr. W. J. Pharr, owner of Pharr Worsted Mills, built the pond to eliminate an eyesore and to provide fishing for his 1,000 employees.



North Belmont School gets a border of multiflora rose. It serves as wildlife habitat, property border, and schoolground beautification.

The students at East Belmont School have done themselves proud in reclaiming the eroded ground in front of the school building. They have planted shrubs and grass and take pride in keeping the area beautiful.

Science Program

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Schools
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he past two years by many more students, teachers, nd patrons of the school than ever before. The follow- ng list of major activities is evidence of that fact.

A week-end of activities was held at Camp York, ear Kings Mountain Battleground, in October 1952 n which 36 teachers spent a most enjoyable day work- ng on ceramics and various types of science activities.

The primary teachers had a sharing meeting in which more than 100 persons exchanged ideas with each other.

Last November the grammar grade teachers of the ounty held their sharing meeting on Tuesday during he workshop held at Bessemer City. Exhibits of interest- ng activities were set up in the gymnasium and teachers nd students from a number of schools in the county

—See CONSERVATION Page 14

Gus Stroupe, student at Tryon School, built his pond as an FFA project to conserve soil and water. It provides swimming, boating, fishing, and a touch of scenic beauty for the family and friends.

Mr. W. J. Pharr, left, member of the Gaston County Board of Education, and Mr. Neil Pharr feed a pet goose who lives in the McAdenville pond.

Put science to work for conservation—these boys are planting multiflora rose and bicolor lespedeza at Ranlo School for wildlife conservation. Photo by Floyd Clark

Backyard Conservation

by Bill Hamnett

Your Turn For a Good Turn

Sometime during the past six weeks you have perhaps seen a Boy Scout, or a group of Scouts, busily engaged in an activity relative to conservation of our natural resources. These youngsters, like millions of other Scouts throughout our great country, have begun their activities in a national *Conservation Good Turn* program. This program of conservation was requested by President Eisenhower, who, "believed that it would be particularly fitting if the Boy Scouts would undertake by concerted action to arouse public recognition of the need for adequate protection and wise management of our soil, water, mineral, forest, grassland, and wildlife resources."

The objective of this *Conservation Good Turn* is two-fold:

1. To help boys develop the right kind of attitudes regarding the importance of natural resources and their wise use.

2. To actually contribute to the rebuilding and wise use of America's natural resources by down-to-earth work projects.

This objective is being accomplished by "educating" Scouts, and through them adults, and also by actual conservation work.

It is well for you to know that your Wildlife Resources Commission recognizes the valuable benefit such a program will be to the wildlife resources of the state and to the people. And we are enlisting your interest in the Boy Scout *Conservation Good Turn* program, which, coupled with ours, will assure these Scouts and Scout leaders the support and encouragement they deserve.

Along with the Scouts in your community you too may want to do some of the projects toward realization of a *Conservation Good Turn* in 1954.

Plant shrubs to provide food and cover for wildlife.

Build and erect bird and squirrel nesting boxes.

Plant hedgerows and fencerows that provide food and cover for wildlife.

Make stream improvements by planting banks to prevent erosion, build small dams, and cover devices.

Plant road-cuts or road sides to prevent erosion.

Plant shrubs, vines and grasses to heal gullies.

Enlist in programs and projects to abate water pollution.

Plant tree seedlings.

Help thin or prune woodlots around home.

Take part in forest fire prevention campaigns.

Assist in programs of "safety with firearms" and demonstrations of fishing safety.

CONSERVATION

from page 13

told of the work they were doing. Many interesting and educational activities in the schools have resulted from the workshops and the sharing meetings.

Children in the elementary schools and in high school science classes have found the following activities most interesting:

Taking field trips to study soils, forests, and wildlife and visiting the nature museum in Charlotte and Gaddy's Goose Refuge at Ansonville.

Attending lectures by soil conservationists, district biologist, game protector, county farm agents, educational representative from Wildlife Commission in Raleigh, and local persons interested in wildlife.

Wildlife clubs, bird clubs, and Audubon junior clubs organized in the schools.

Working in school gardens or gardens as special grade projects.

Erecting bird houses, watering places, and feeding stations near the school buildings and at the individual students homes.

Planting hundreds and thousands of plants of multiflora rose and bicolor lespedeza plants near the school buildings and on the farms as cover and food for wildlife.

Building nature trails near the school buildings for nature in the natural setting.

Building outdoor classrooms near school buildings for use by all the grades in their nature study classes.

Two bird sanctuaries have been officially established in Gaston county. One at McAdenville and the other in Gastonia. An educational program on the value of birds and the importance of providing food and protection for them is gaining interest in both the city and county schools.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Dates Announced for Public Hearings on Proposed Hunting Regulations

In keeping with its established policy of giving Tar Heel sportsmen an opportunity to express their views on how the rules regarding hunting should be set up, the Wildlife Resources Commission has announced the time and place of a series of nine public hearings. At the hearings the Commission will present a set of proposed regulations to interested sportsmen, giving them an opportunity to express their wishes or views with regard to changes or additions.

After the expressions from sportsmen have been given consideration the Commission will set the 1954-1955 official hunting regulations at a meeting to be held early in June.

Following are the places and dates of the hearings:

District 9	Sylva	7:30 P.M. Courthouse	May 25
District 8	Morganton	7:30 P.M. Courthouse	May 26
District 7	Dobson	7:30 P.M. Courthouse	May 27
District 6	Albemarle	7:30 P.M. Courthouse	May 28
District 5	Graham	7:30 P.M. Agricultural Hall	May 31
District 4	Elizabethtown	7:30 P.M. Courthouse	June 1
District 3	Rocky Mount	7:30 P.M. City Court Room	June 2
District 2	New Bern	7:30 P.M. Courthouse	June 3
District 1	Edenton	7:30 P.M. Courthouse	June 4

Persons interested in making any suggestions for the coming seasons should arrange to be present at these meetings.

* * * *

Baltimore Minnows Banned from Kerr Reservoir

A mutual agreement between Virginia and North Carolina regarding the rules for fishing in this big body of water have been amended to control the taking of minnows from the reservoir commercially, and the use of Baltimore minnows for bait minnows has been banned completely. Baltimore minnows are actually cull goldfish, and when released in impounded waters these fish can completely ruin these waters for game fish.

The amendment becomes a part of the Virginia-North Carolina mutual agreement and will be enforced by officers of both states.

* * * *

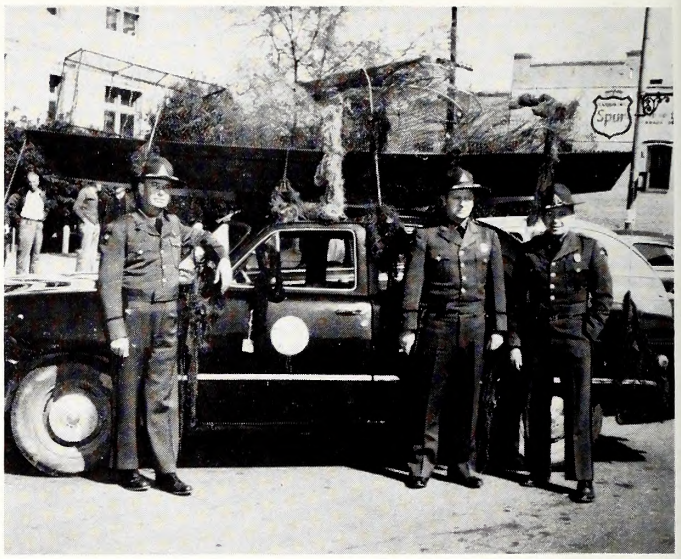
Sports and Commercial Fishermen Urged to Bring In Spawner Rockfish

With the peak of the spawning season for rockfish or striped bass expected to occur in the Roanoke River during the first two weeks of May, all anglers catching fish believed to be in spawning condition are urged to bring fish in to the Weldon Hatchery where eggs may be fertilized and hatched. Technicians of the Wildlife Resources Commission which operates the hatchery will be on hand 24 hours a day to handle fish. The Commission pays $20.00 per million for eggs, and fish must be brought to the hatchery within 20 minutes after capture. A single fish may contan well over a million eggs, and be worth $20.00 or more.

Protecting Your WILDLIFE

by Luther G. Partin
Education Representative

The Wildlife Commission's Enforcement Division has quite a job to do, and they're doing it very well.



Men like these are responsible for protecting North Carolina's wildlife for present and future generations. Shown is a load of confiscated fish nets and traps.

There's an old saying that's been going around for countless years. In fact, it can be traced back to the earliest form of animal that could, however loosely, be called man. We have evidence that prehistoric man recognized the ring of truth in the afore-mentioned adage, by virture of his domestication of animals and cultivation of plants to provide a relatively constant supply of food. You may have already recognized the old saying as "you can't have your cake and eat it too."

It has been said that this most sagacious remark first issued from the prominent lips of a character who, if he had owned a comb, would have had to use it on his forehead. It seems this primordial philosopher lived alone on a fertile island blessed with an abundance of wild game which he killed for food. Eventually he became tired of hunting and cooking; spurred by distaste for these ignominious tasks, he decided to set fire to the island. This way he could kill his food and cook it at the same time. The fire did the trick; his island was covered with slightly-scorched venison, well-done rabbit and various other choice foods. For several days he feasted sumptuously and leisurely. Then his hitherto delicacies began to grow odoriferous, and soon he discovered his food supply had been destroyed by evil spirits. (We call them bacteria and fungi.)

One day there was not a morsel of food on the island —everything had been destroyed by his fire. He began to see the error of his ways. Day by day he waxed weaker and wiser. Just before the breath of life departed, a passing seagull is reported to have heard him gasp the now immortal words, "you can't have your cake and eat it too."

After reading this a lot of people are going to say, "So what? Everybody knows you can't eat your cake and have it too. Why waste time talking about it?" Well here's why, in the opinion of people interested in having wildlife to enjoy next year, and the next generation.

What about the fellow who shoots a doe intentionally, or hunts deer at night with lights? What about the so-called sportsman who hunts during the breeding season, destroying next year's crop of game? And the fellow who shoots up a covey until there's nothing left for breeding stock? Taking undersize fish, or game and fish out-of-season, or exceeding bag or creel limits —we could go on indefinitely. These and other unsportsmanlike activities are, figuratively speaking, perfect examples of trying to "eat your wildlife cake and have it too." In many sections of North Carolina, too much "eating" has reduced the amount of wildlife until it is now a scarce commodity.

Wildlife must be regarded as a crop and treated as such. There is a surplus of game birds, animals, and fish in most years. If the surplus is wisely harvested each year, leaving enough for breeding stock, we can expect good hunting and fishing in the future. Then the question arises, who is going to decide how much of the crop is surplus and how it is to be harvested? The accepted theory is this—wildlife is extremely mobile. In most cases wildlife ranges widely throughout the year. Some varieties move from one state to another. Others may move only a few miles in a lifetime. In very few instances can one be certain that his property is the sole habitat of a specimen of game or fish. In view of these facts, it is not difficult to understand why wildlife has long been regarded as the joint property of the people. It logically follows that the people should decide how much wildlife can be safely harvested each year, and the manner in which it should be harvested.

In North Carolina the people are represented by the Wildlife Resources Commission. Funds for operation are obtained from sale of hunting and fishing licenses.

The avowed purpose of the Commission is to provide "MORE SPORT FOR MORE PEOPLE . . . EQUAL OPPORTUNITY FOR ALL." In assuring equitable distribution of the wildlife surplus to licensed sportsmen, the Commission acts within legal boundaries provided by the people as represented by the General Assembly. A board of commissioners, one from each district, is the policy-making agency of the Commission. Public hearings are held annually in each of the districs to give the people an opportunity to tell the Commission what they want in the line of regulations and Commission activities during the year.

The wildlife protection activities of the Commission are a combination of law, regulation, and enforcement. There are some people who will, if pemitted, eat all of the proverbial cake. The Law Enforcement Division of the Wildlife Commission is kept quite busy because of these people. In fact, enforcement of wildlife regulations is by far the extensive operation of the Commission, requiring more money and personnel than any other division.

This is not surprising when you consider that there are 110 wildlife protectors in North Carolina. Each county has at least one protector; some with large wildlife populations have two protectors. In addition, there are eighteen roving wildlife patrolmen authorized—two in each of the nine districts. There is a supervisor in each district to direct the activities of the protectors and the patrolmen. A wildlife patrol pilot, a clerk-typist, and an administrative chief complete the personnel list.

An inventory of equipment will show why large amounts of money are necessary for enforcement. Twenty-seven cars are used in law enforcement; twenty-six of these are equipped with 2-way radios and are mobile radio units. The Division has a plane which is used to make enforcement more effective by providing aerial observation when needed. There are approximately 100 outboard motor boats available and 100 outboard motors, as well as four cabin boats. The Division owns 18 pairs of binoculars and 26 handie-talkie radio sets. All enforcement officers are furnished a complete summer and winter uniform.

Wildlife protectors, in addition to enforcing regulations, must be familiar with the theory and practice of game management, and maintain the confidence and respect of the people while carrying out their duties. To assure the high caliber of personnel implied above, rigorous competitive examinations are held each year. Applicants from all over the state take mental, physical, and aptitude tests. The top-ranking candidates are selected as student officers, and are given a period of intensive training. The Institute of Government of the University of North Carolina serves as the agency of instruction. The trainees are given instruction in game and fish laws and regulations, game and fish management, public relations, history, civics, firearms and self defense, and the laws of arrest, search, and

Wildlife protectors are trained thoroughly in wildlife conservation and law enforcement at the Institute of Government at Chapel Hill.

seizure. Visiting lecturers give instruction concerning the work of other agencies also concerned with wildlife conservation. This pre-service training is followed by periodic in-service training designed to allow protectors to better equip themselves for their duties.

While the greater part of a protector's time is devoted to law enforcement activities, his service to conservation requires much more than arrest and prosecution. He is called upon frequently by farm, youth, civic, and conservation groups for aid and advice. These instances are very profitable, conservation-wise, because of the opportunity to bring desirable conservation practices and concepts to the awareness of the public. Wildlife protectors are responsible for the sale of hunting, fishing, and other licenses issued by the Wildlife Resources Commission. These licenses are consigned to the protector who, in turn, selects bonded subagents in his county and consigns the licenses to them. The protector collects the receipts from license sales and sends them with all records to the Raleigh accounting office.

But to get back to the most time-consuming duty of the protector, law enforcement, let's examine some of the available statistics for any results, trends, etc., which may be indicated.

The number of prosecutions has tended to increase since 1946 from 4,384 to 7,483 in 1953. There are several factors involved in this "crime wave." License sales indicate that the number of licensed hunters and fishermen have more than doubled. The number of protectors increased during the same period, adding to the possibility of a violator being spotted. The variety and quantity of equipment used in enforcement has improved at the same time. While the number of potential violators has undoubtedly increased, the large number of prosecutions in recent years can probably

•——————See ENFORCEMENT Page 22

DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

For the third time in as many years, the N. C. Wildlife Federation and the Wildlife Resources Commission have cooperated in conducting wildlife quiz contests for Tar Heel highschool youngsters. Contests of this type seem at first a little slow in catching on, but this year's event turned out much better than anyone expected. Over 5,500 youngsters were signed up by their teachers to enter the contest, and well over 600 submitted entries. Needless to point out, the job of judging so many entries was a tremendous one, and both the Commission and the Federation are indebted to Dr. Fred Barkalow of N. C. State College and his wildlife students for doing a splendid job.

* * * *

Usually the months of March and April see a slump in outdoor activities, with a tremendous increase in fishing interest and fishing activity during late April. It is in May, however, that things really start humming in fishing circles. Inland, bass and bream start hitting surface lures, having been partial to spoons and other underwater bait through late winter and spring. The mountain trout fishing season is getting into full swing, while along the coast the blues, channel bass, and other salt water game fish are providing sport for countless surf casters.

Out in the woods and fields the breeding season for upland game is well under way, while up in the northern marshes next fall's crop of ducks and geese is being produced. May is truly a month when outdoor interest is in full flow and Nature begins to replenish the earth.

Most important to the hundreds of thousands of youngsters who have been more or less confined by the regimen of school is the fact that May marks the beginning of summer vacation. Tired, tax-worn business men are planning their vacations.

* * * *

A year ago we tuned in our beaten up radio to hear a guy who would rather fish than eat, if he's not too hungry. His next favorite hobby is talking about fishing. Through the fishing season he has a weekly 15 minute fishing show called "Let's Go Fishing!" The program we are concerned with here concerned Fathers Day. We think dads—and mom and the kids—who enjoy Crackshots might enjoy it. Here it is:

THE CARE AND FEEDING OF FATHERS

by Phil Ellis

Radio Station WPTF, Raleigh

On page one of the column tonight, we have a little thing called "The Care and Feeding of Fathers." Pop—you're allowed to listen to this if you insist—but what I have to say for the next few minutes is directed primarily at mom and the kids. And I hope they'll listen very carefully. You see mom, dads aren't really an oppressed lot. They have it pretty good all year long . . . mostly because you and the youngsters are around to occasionally inflate pop's ego—and give him something to brag about when he can't think of anything else to say. I'll admit it gets a little rough occasionally when the rest of you in the family go on a buying spree and he has to pick up the bills at the end of the month. And on those days when dad would much rather go fishing than clean out the attic—he doesn't always win the argument. And that gives him a temporary dim view of the institution of matrimony. But, all in all, dad isn't complaining much. On this Father's Day, however, if you want to really make the old man feel like he's king in his castle . . . I have a few tips. Let's start the festivities by having you—mom and the kids—suggest to dad that maybe he'd like to go fishing. And, for heaven's sake, don't tell him it's "all right if he goes—provided you go along too." I know, you like to fish—but it has been my experience that when mama goes along, she catches more fish than pop does—and that's a bitter pill. So, since this is dad's day to howl, don't introduce any competition that might interfere with those sessions-to-come on "how many fish I caught last Father's Day and how big that big one was and how long it took me to land him and blah-blah-blah.

Now, after dad has recovered sufficiently from the shock of the suggestion that he go fishing—and has picked himself up off the floor—he'll probably say he things that's a mighty fine idea. And he'll call up some of the boys and before you can say—give me ten—he's got a trip lined up. And here's where you can be of real service again. In spite of your burning temptation to

bring the subject up, for heaven's sake don't say "dear, I know this trip is going to cost quite a bit of money, but if you can spend that money on yourself, I know you won't mind if I go out and buy myself a new hat and a new pair of shoes and a new dress, and a new this and a new that, and so on." I think pop will feel a little better about going if you don't bring that matter to his attention. If you insist on going on a shopping spree while he's away—keep it a secret until he's back and recovered. The shock will be infinitely easier to take.

Well, the remainder of the getting-away routine is fairly simple. You might volunteer to pack his bag, but when it comes to lining up the fishing tackle, don't open your mouth. Fathers are a little peculiar about having mom tell them they should use 25 instead of 15 pound test line. About the only thing you should remember to do when he leaves the house at some ungodly hour—such as two o'clock in the morning—so he can get to the coast and be aboard his boat at five—is to, at great personal sacrifice to yourself, squeeze out a smile and a "have a good time, dear" before you fall back in bed . . . a nervous wreck.

Now while dad's gone on this fishing trip, you will have several opportunities. You can sneak in that shopping trip, if you insist. You can also catch up on the sleep you lost for the two days it took to get the old man out of your hair. And it's amazing how much cleaner the house will be without pop around to mess it up.

So, time has flown. The fishing trip is over, and he's back home again. In the first place, it will be very late at night when he pulls up in front of the house. May I suggest you be up to meet him—but be careful how you do it. You see, he isn't going to be feeling very well. I really can't say what will have caused this physical weakness, this shaky hand, this throbbing head. But I'm reasonably sure he won't be feeling very good. So when you greet the king of the castle, do it gently. Don't make any sudden moves. He might break. And then, the next thing is to find out about the trip. This requires a great deal of tact. You should never say "how many did you catch." Instead, very gently and carefully inquire "did you have any luck." You see, there's a difference there. The latter question gives him a chance to either say "Oh, Boy—you bet!", or, with guarded manner, "pretty good" . . . or, as is so often the case . . . "Nahhhh. Too much wind." And if that last one is the answer you get, drop the matter right there. He'll get around to the bitter truth soon enough—when he has successfully put together the words that he thinks will do the trick. He's been thinking for the past five hours how he was going to tell you he got two lousy bluefish and a five pound stingray. It will take him approximately seven minutes additional time—after he's plunked himself in his favorite chair in the livingroom and has a chance to adjust himself to your cooperative silence.

The next step is to administer the proper potions to relieve his illness—which is very real by this time. As to what that will be, I imagine it should be something tall and cool. And you probably know your husband well enough by this time to know what the contents of the admixture should be to get the best results.

Then, ease him off to bed . . . and let him sleep. In the meanwhile, I trust you have had forethought to instill into the youngsters—who haven't seen pop for ever-so-long—the rank inadvisability of dashing headlong into his bedroom at six o'clock in the morning, leaping on the bed like a pack of beagles, and yelling "Hey, Daddy . . . did you catch a fish!"

From there on, things will pretty well work themselves out. You should only remember to keep his lack of success a secret. He may weaken the next time you have dinner guests in and tell the truth . . . but if he doesn't weaken—or, even if he doesn't tell the whole truth—let him have his story. After all, you got that new dress—and he doesn't know a thing about it. And he won't until you decide to weaken and tell the truth.

Of course, there's an alternate ending to this story. Suppose pop comes in from this fabulous fishing trip at the aforementioned late hour and has, perchance, filled the tub with various and sundry fish. If that be true, the whole modus operandi changes. You can tell him all the bad news you want to. Treat him the way you do the other 364 days of the year. And let the kids wake him up at three o'clock in the morning if they like. He'll be so happy about his angling bonanza that he'll put up with anything.

But it will all be over. Father will have had his day. And you—mom and youngsters—will have earned an additional star in your crown for the real jim-dandy way you learned your lesson on "the care and feeding of fathers."

By the way, just to show you I don't always practice what I preach, I've made plans to take the whole family fishing with me this week-end. Seems we're going down to Kure Beach to see what Bill Robertson has to offer in the way of pier fishing, flounder, gigging, surfcasting, sunbathing—or anything else he suggests. And if you fathers are wondering why I'm taking on all this family load on my day, you see, I sneaked off on Mother's Day and went fishing by myself. Like they say—be sure your sins will find you out.

In the Mail

Jerry Barnett, Salisbury, contributes a philosophic admonition on stream pollution:

"God created the Heavens and the Earth. He also

Wild Dog Depredation

Hendersonville Time-News Photo by Loveland

This deer was killed by roving dogs, one of the greatest menaces to deer in North Carolina. District biologist Rex Bird points to a large chunk torn from the deer while it was still alive. This deer was imported from Wisconsin, costing sportsmen $125.00.

created the streams and the fishes. Water was provided to quench Man's thirst; the fish were provided for food. Now Man has added to God's creation by his ingenious inventions which he uses very carelessly to destroy his means of survival.

"Fish and wildlife cannot live and reproduce if streams are flooded with poison. For the sake of our future generations who might enjoy some of God's creation, let us declare war on this stream pollution now!"

Wade W. Hoey, Shelby, writes:

"Governor William Umstead has manifested his interest in the wildlife of North Carolina by designating the week of March 21-27 as National Wildlife Week in North Carolina. Those of us who are interested in the preservation of such are deeply impressed with this human interest exhibited and wish to express our appreciation."

Mr. Hoey submitted the following which is believed to be taken from an old British court decision or court opinion:

Poor Man's Notion of the Game Law

"'It is impossible to make an uneducated man understand in what manner a bird hatched, nobody knows where—today living in my field, tomorrow in yours, should be as strictly property as the goose, whose whole history can be traced in the most authentic and satisfactory manner from the egg to the spit. The arguments on which this depends are so contrary to the notions of the poor; so repugnant to their possessions and perhaps so much above their comprehension, that they are totally unavailing.

The same man who would respect an orchard, a garden, or a henroost, scarcely thinks he is committing any fault at all in invading the game covers of his richer neighbors, and as soon as he becomes wearried of honest industry his first resource is in plundering the magazines of hares, pheasants, and partridges. The top and bottom dishes, which on every side of his village are running and flying before his eyes, as these things cannot be done in the night; and in this manner a lawless marauder is often formed who proceeds from one infringement of the law and property to another, till he becomes a thoroughly mad and corrupted member of society.'"

WILDLIFE has been used in the school room, the army day room, hospital sick room, and is exported for foreign enlightenment. Here is an even more unique use by B. L. Wilson, 91 Court St., Newtonville, Massachusetts, who sent in a renewal subscription:

Editor

Wildlife In North Carolina

"Congratulations for publishing an exceedingly interesting magazine. I plan to use it in part for lip reading instruction with hard-of-hearing children in the Newton, Mass. public schools. Your pictures and diagrams are excellent for this purpose."

This letter ought to attract the attention of dads and mothers whose youngsters own BB guns. The author asks that her name be withheld:

"Is there anything you, or someone, can do about the careless and merciless killing of songbirds? Robins, cardinals, and other birds. The boys use air rifles and bean shooters. They never seem to realize, or their parents don't, that certain birds are always protected. If Box Holder leaflets were sent out, perhaps more people would be informed . . ."

We think parents are as much or more to blame for the wanton killing of songbirds than the youngsters who do the shooting. Giving a youngster a gun without instructing him on how to use it is like giving him the keys to a car without teaching him to drive. It is just plain dangerous.

Frank W. Swafford, shift foreman in Pulp Production department of the Carolina division of the Champion Paper and Fibre Company, is heartily in favor of the new trout fishing license which became effective this year.

Here's proof:

"Swafford, several days ago, stepped into the Nantahala Hardware Company, in Canton, and instead of purchasing just one trout stamp . . . he bought five of them to further cooperate with the Wildlife program.

"Swafford, an ardent dry fly trout angler, said today that if they had been issued in the form of stamps, as such, he would have purchased ten of them.

"I thought this was an excellent story and worth mentioning in *Wildlife In North Carolina.*"

Sincerely,

J. M. Deaton

School Page . . . *By Lunette Barber*

Meet The 4-H Bluebird Club

Homes for bluebirds made by the Falkland Junior 4-H Club.

Tobacco barns, bluebirds, a 4-H Club, and bird houses are what the following is about: Pitt county is the largest tobacco growing county in North Carolina. There are between 12,000 and 13,000 tobacco barns in the county in which tobacco grown on about 37,000 acres is cured. Do tobacco barns have anything to do with bluebirds? No, but bluebirds have something to do with tobacco barns.

The bluebird is among our most valuable insect eating songbirds because they help farmers in their constant struggle against insects. Among the pests eaten by bluebirds are May beetles, wood-boring beetles, weevils including the white-pine weevil, cut-worms, army-worms, tent-caterpillars, gipsy-moth caterpillars, canker-worms, leaf-hoppers, plant-lice, cicadas and tree-hoppers. In fact almost seven-tenths of its food is derived from insects and the balance is mainly wild fruits. The bluebird is also recognized for its outstanding aesthetic value. It is easy to see that a bird as valuable as this aids the farmers in Pitt county in growing 37,000 acres of tobacco.

What do bluebirds have to do with tobacco barns? The bluebirds like to nest in a hollow limb, hole in a trunk, deserted woodpecker's nest, nesting box or bird house, from 3 to 30 feet up. In recent years, since tobacco is being cured with heat produced through oil burners, the birds go into the barns and get trapped in the burners and die. In one barn alone 50 birds were found dead because they were accidentally trapped and could not get out.

It has not been decided whether the birds are looking for a place to roost, rest, or build, but with a little effort they can be saved. The burners may be opened so that the birds can get out, or the place of entrance screened, and if it is a nesting site they want, listen to this, The Falkland 4-H Junior Club of Pitt county built 40 bluebird houses and built them *correctly.* Each member was furnished a copy of plans, a movie was shown to illustrate correct details, and suggestions made. The project was under the supervision of the Club's leaders, Miss Josephine Cusick, assistant home agent, and Mr. C. J. Goodman, assistant county agent.

Mr. Ed Warren, principal of the Falkland school gave his full approval and the teachers encouraged and assisted the members in every way possible. The teachers even helped the children by letting them write stories in English. The topic chosen was Why I Want to Protect Bluebirds, and the stories were very good. It is always gratifying and encouraging to have principals and teachers supporting 4-H Clubs in the schools. The children worked together with the assistance of parents, friends and neighbors. One of the teachers helped greatly by giving some scrap lumber that was left from building her new home. It was also found that there were several sets of brothers and sisters who made houses together. Even the president, Shelba Dawn Wooten and her brother Mitchell Wooten helped each other make and mount their houses.

Building the bird houses and erecting them is not the end of the project. Each member promised to open the tobacco burners at home and keep a keen eye on the house after it is mounted and observe the activities of the birds and see how many bluebirds are reared this summer.

Shelba Dawn Wooten, club president, and her brother, Mitchell mount the bird houses they cooperated in building.

Photos by Luther Partin

The Enforcement Division uses a radio-equipped plane to assist protectors and patrolmen on foot and in cars and boats to close in on violators.

ENFORCEMENT

from page 17

be attributed to the efficiency of the Law Enforcement Division.

The most numerous type of prosecution, as shown by the court records, is for license violation, that is taking wildlife without proper license. Annually, these violations comprise around 55 per cent of the total. In 1953 of the total 7,483 prosecutions, 4,096 were for license violations. From April to July fishing license violations range from 50-60 per cent of the total. For instance, in May 1953, there were 1,163 prosecutions —of these 590 were due to fishing license violations. During the hunting season hunting license violations take the spotlight, climbing rapidly in August and climaxing in November. While hunting license violations do not become such a large part of total, they are so numerous as to make any other single type seem rather small. In 1953, November the peak hunting month, statistics showed 367 hunting license violations compared to 606 violations of all other types, or roughly 38 per cent of the total. Annually, May and November combine to provide 25-30 per cent of the total.

As indicated above, the poor, defenseless fish bear the brunt of the violator's attack. In the past few years, more than twice as many people are apprehended fishing without licenses as are hunting without licenses. Fishing waters are more concentrated than are hunting areas, causing many people to leave their county of residence in pursuit of that big one. Too, it is safe to say that more people wet lines than shoot guns, for several reasons. Obviously, less capital is required for a cane pole, line, cork, hook, and a few worms, than is required for a gun, ammunition, and possibly a dog. Fishing is, for most of us, less strenuous than following the hound, thus explaining the large numbers of the fair sex and older people who drown worms. The result is a sizable annual list of violations concerning fish.

The list of prosecutions each year is large, true; but consider what it would be if all violators were caught! A competent authority estimates that the 1953 total of 7,483 violations apprehended represented at most 10 per cent of those occurring. This means that there were probably 75,000 violations actually occurring. It is mute testimony to the efficiency of the protectors to note that one man in each county can bring one violator out of ten to justice. Actually, if the Enforcement Division could provide a protector for each hunter and fisherman in the county, there would still be violators that were not apprehended.

As previously stated, the Enforcement Division requires the largest expenditures of any division of the Commission. Percentage-wise, 42.34 per cent of the Commission's 1948-50 budget was spent on enforcement. During the 1950-52 period, 41 per cent of the budget was used. These figures are somewhat deceptive since actually more money was used for enforcement in 1950-52 than in 1948-50. The difference lies in the fact that the 1950-52 receipts increased more than enforcement expenditures, resulting in a smaller fraction of the total being used.

The enforcement personnel that we see are employed by the people to conserve the wildlife in our state. When we hunt or fish in a manner destructive to wildlife, we are depriving ourselves and our descendents of future wealth. The protector loses nothing that no other citizen loses. Use your protector wisely. His efforts are much more profitable when he is used to aid the citizens of a community in carrying on an intelligent wildlife conservation program. Consult him in regard to good conservation practices that can be carried out on your property. If he is forever forced to use fear of court action as a last resort to prevent willful disregard of the law, his efforts will eventally become as unproductive as sowing seeds in a whirlwind.

Incidental to its activities concerned with wildlife conservation, the Enforcement Division contributes financially to the schools of our state. The fines arising from prosecution of violators are paid into the school funds of the county in which the violation occurs. The increasing quality of enforcement personnel and equipment has doubled the amount of such money going into county school funds in the past six years. However, officials of the school system urge that contributions be made to education in a manner more befitting a law-abiding citizen.

CORRECTION

Last month's COVER (page 3) should have read: The Cooper's Hawk is one of the only two hawks NOT protected by North Carolina law. The other is the Sharpshinned Hawk.

PROTECTOR OF THE MONTH

Paul Lamphere

Originally a native of Pennsylvania, Mr. Paul DeLeon Lamphere married a North Carolina girl and moved to this State in 1951. He accepted employment with the Wildlife Resources Commission in 1952.

Mr. Lamphere's prior experience includes five years with the city police department of Towanda, Pennsylvania, and four and one-half years in the Army during World War II. He served overseas in the European theater for three years during which he was awarded the Purple Heart and the Bronze Star.

Mr. Lamphere's formal law enforcement training consists of three courses conducted by the Federal Bureau of Investigation and one by the Institute of Government at the University of North Carolina. He is now stationed in Randolph county, residing at 562 East Presnell Street, Asheboro.

Division Enforcement Record for February

Persons checked	**27,811**
Prosecutions	**333**
Convictions	**284**

A total of $2,763.00 in fines was collected and paid into the school funds of the counties in which the convictions were obtained. Fines were not collected, being either suspended or not levied, in 37.32% of the total number of convictions.

It's the Law!

Question: Would it be a violation of the law for a sportsman to buy a .22 caliber pistol and carry it in his tackle box while fishing?

Answer: This would not violate any game or fish law that we know of, unless the pistol were being used to shoot fish or to hunt wild birds or animals out of season, or on Sunday or without a hunting license. The State law formerly made it a violation for a person to be found off his own premises on Sunday in possession of any firearm, but the statute was amended in 1945 so as to prohibit only the act of hunting with firearms on Sunday.

The general criminal law makes it a misdemeanor to buy or sell a pistol within this State unless a permit to do so is first obtained from the clerk of the superior court of the county in which the sale or purchase takes place.

Once a pistol has been lawfully obtained, the most serious objection to carrying it in a tackle box seems to be raised by the statute prohibiting the carrying of concealed weapons. Section 14-269 of the General Statutes makes it a misdemeanor for a person, except when on his own premises, to carry certain weapons, including pistols, concealed about his person. Since our Supreme Court has said that the phrase "concealed about his person" is broad enough to include a weapon concealed within the reach and control of the person, we are of the opinion that carrying a pistol in a tackle box would probably violate this statute.

Dates for Public Hearings on Proposed Hunting Regulations

If you are interested in having a voice in setting up the rules regarding the 1954-1955 hunting regulations, here are the dates and places of the public hearings which will be held throughout North Carolina:

District 9	**Sylva**	**7:30 P.M. Courthouse**	**May 25**
District 8	**Morganton**	**7:30 P.M. Courthouse**	**May 26**
District 7	**Dobson**	**7:30 P.M. Courthouse**	**May 27**
District 6	**Albemarle**	**7:30 P.M. Courthouse**	**May 28**
District 5	**Graham**	**7:30 P.M. Agricultural Hall**	**May 31**
District 4	**Elizabethtown**	**7:30 P.M. Courthouse**	**June 1**
District 3	**Rocky Mount**	**7:30 P.M. City Court Room**	**June 2**
District 2	**New Bern**	**7:30 P.M. Courthouse**	**June 3**
District 1	**Edenton**	**7:30 P.M. Courthouse**	**June 4**

Favorite Spinning Lures

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Wildlife
IN NORTH CAROLINA

TEN CENTS JUNE • 1954

Photo by Jack Dermid

Nature's Productivity

Here is proof of the cottontail's capacity for big families. The cover of the nest, composed of grass and hair from the mother's breast, has been parted to reveal five of the seven squirming babies. Their eyes are still unopened, and their helplessness emphasizes the importance of keeping hunting dogs penned during the breeding season.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

WILLIAM B. UMSTEAD
Governor

North Carolina Wildlife Resources Commission

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COVER

Win Donat portrays Nature's civil engineer atop one of its own dams. Once completely trapped out in North Carolina, the beaver has been successfully re-established in the Sandhills Wildlife Management Area and other suitable localities. See the back cover for details of the beaver's life history.

☆ ☆ ☆

EDITORIAL STAFF

Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Anne Taylor ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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History of the GAME DIVISION

by Luther Partin
Education Representative

Noah Webster defines a crop as the harvest or yield of anything during one season. Crops, as we normally speak of them, are grown and harvested by farmers. Sometimes the crop is poor and everything yielded must be saved to use for seed the next year. Again, there may be a surplus that can be consumed, stored, or sold, in all cases becoming a valuable commodity worthy of much effort in planning, management, and protection.

There is a crop, not recognized by most as such, that has not been producing the desired harvest in recent years, largely because it has not been recognized in its true light. The object in reference is the game bird and animal crop in North Carolina. Deer, quail, rabbits, and practically any form of wildlife respond to some type of management, just as do field crops. No crop will produce a harvestable surplus unless it has access to the essential elements needed for survival, growth, and reproduction. Obviously, the chances for a good crop are much better if the things that affect its well-being are known and accounted for in the planning and management of the crop.

The overall objective of the Game Division, of the North Carolina Wildlife Resources Commission, is to increase the harvestable game surplus in North Carolina. The notable success that the Division has achieved to date can be attributed to its treatment of game as a crop. The Division carries on intensive research all over the state to uncover the factors which affect game birds and animals, either favorably or unfavorably. Just as soil types, food needs, space needs, insect control methods, etc., must be known to manage a field crop well, so must habitat requirements, food requirements, space requirements, protective methods, etc., be known to manage a game crop and produce a harvestable game surplus.

Improved deer habitat on the Pisgah Game Preserve, consisting of clearing and planting of permanent pasture mixture.

For instance, it would be folly to attempt to increase the numbers of a game species without first knowing the type of country best suited to it. The best conditions might be provided by a swamp, a farm woodlot, a pine forest, a hardwood forest, cultivated fields, turned-out fields, etc, or any combination of the foregoing. Climate, food, cover, space requirements, natural enemies, rate of reproduction—all these factors must be understood and given due consideration in a game program. The information revealed by the Game Division's research is applied to its various game management programs and disseminated to landowners and sportsmen throughout the state to aid them in their own efforts.

It becomes obvious that increasing the harvestable game surplus requires the use of different methods for different species of game. The problems faced in increasing the numbers of deer are quite different from those encountered in increasing the quail supply. Deer are very large, as game varieties go, and are fairly easily spotted by hunters. Large wooded areas are necessary for food, cover, and protection. A doe has usually not more than two offspring each year. These circumstances have combined to cause the complete disappearance of deer in parts of North Carolina. Quail, on the other hand, often produce from twelve to sixteen offspring from each mating. They do not require large wooded areas, in fact, they get along fine on farmland if there is enough shrubbery growth for cover and protection. The food requirements of quail are relatively simple; weed patches, field corners, and an occasional food patch will support sizeable quail numbers, if nearby cover is available.

The Game Division groups species having rather similar requirements in management programs. Some of them are: upland game restoration, dealing with quail, squirrel, rabbit, and turkey; big game restoration, involving deer, bear, and wild boar; marsh resources investigation, dealing with muskrat, mink, otter, ducks and geese; wildlife management areas; and various other miscellaneous projects.

An examination of some of these individual programs is necessary to see exactly what the Game Division is doing to accomplish its objectives. The upland game restoration program is devoted to increasing the

A Summary of the Work the Game Division Has Been Doing to Provide More Sport for Tar Heel Hunters.

numbers of quail, squirrels, rabbits and turkeys. There is usually a game population in an area large enough to consume the available food, if there is enough protective cover. This is especially true with quail and rabbits, as they are found to some extent in every county in the state. With their reproductive rate, it is only necessary, generally speaking, to increase the food and cover to increase the quail and rabbit population. Thus, the major efforts are directed toward improving the habitat. This is accomplished by establishing plants which provide food and shelter. Multiflora rose provides a dense mass of cover that can even be used as a fence for livestock. Sericea lespedeza is also a good cover plant. Bicolor lespedeza produces an abundance of seed that is available as wildlife food during the winter. When these plants are established along field borders, in odd corners, or as a food patch, the hunting situation is usually improved considerably.

The Game Division maintains a nursery to provide the above plants for use in its game programs, and for planting by landowners and sportsmen. Individuals or groups may obtain these plants free by making application to county agents, Soil Conservation personnel, wildlife clubs, or personnel of the Wildlife Resources Commission.

The case of the wild turkey is not so simple as that of quail and rabbit. Wild turkeys have been baited, trapped, and otherwise hunted out in many sections of North Carolina. Consequently, any efforts to increase the numbers of turkeys must include in many cases restocking as well as habitat improvement. The division has several turkey management areas which provide stock for transplanting in other areas having suitable food and cover.

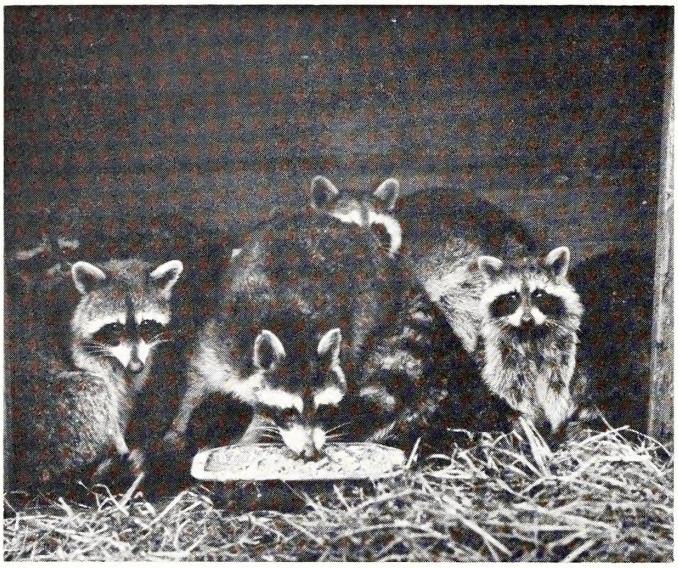
The Game Division has recently completed a very intensive study of the gray squirrel population in North Carolina, in cooperation with the Division of Biological Sciences at North Carolina State College. The authors of a report arising from the project concluded that the most practical techniques for gray squirrel management are an appropriately timed hunting season and, in some instances, improvement of the habitat.

The investigations revealed that female squirrels killed in September are often pregnant or nursing young. In September and early October many squirrels are infested with "wolves," the larvae of the botfly. These squirrels, when killed by hunters, are usually thrown away. An early season causes waste of adult squirrels and a great loss of young and unborn squirrels.

The white-tail deer is one of the most elusive and sought-after game animals in North Carolina. Through the efforts of the Game Division deer hunting has become more rewarding in recent years. (Fish and Wildlife Service photo by E. P. Haddon.)

The suggestions for improving squirrel habitat include selective cutting and maintenance of a mixed stand in the woodlot. The ideal habitat includes trees of mixed ages and trees of different species. Two or three hollow trees per acre of woodland will provide enough dens. Squirrels depend largely upon hardwoods such as oak, hickory, and chestnut to provide foods during the winter.

Waterfowl have been the object of extensive investigation by the Game Division. Workers have attempted to find the factors affecting the well-being of waterfowl. They have studied waterfowl populations trends and compositions as to sex and age ratio; banded ducks and geese; compiled annual kill records; and cooperated with the U. S. Fish and Wildlife Service in all matters concerning migratory waterfowl. The division has located, evaluated, and made recommendations for areas potentially valuable as waterfowl management units. The Orton Waterfowl Development has been



A group of eastern North Carolina 'coons ready for shipment to western North Carolina for restocking purposes.

set up to provide a workshop for study of marsh development and management methods for waterfowl. Experiments in removing undesirable vegatation, planting good waterfowl foods, and marsh creation are carried out as a part of the objective to increase the waterfowl harvest. Naturally, if development of good conditions in the Orton area attracts larger numbers of waterfowl, the hunters in surrounding areas will have better hunting.

Fur resources investigations have been concerned with marsh management and muskrat management in compliance with the theory that to increase the numbers of a species the living conditions must first be improved. Experimental work has included control of water levels, planting muskrat foods, and protection from predators. Dikes have proven to be very effective in preventing abrupt changes in the water levels. Sudden flooding can be very destructive to young muskrats and drainage during dry spells exposes them to predators. Since large expanses of marsh in the state contain sawgrass, needlerush, and other plants which are of no value as foods, game workers have sought methods of eliminating them and planting other species that are good wildlife foods. The Game Division has succeeded in getting diked and managed marsh to support from two to five times as many muskrats as marsh in its original condition.

Raccoon numbers have been very low in western North Carolina for many years. Timber-cutting and heavy hunting pressure were the chief causes for the decrease. Eastern North Carolina 'coon populations have not been seriously affected, and have increased rapidly in recent years. In an effort to somewhat help the situation between east and west, the North Carolina Wildlife Resources Commission has set up a program whereby eastern trappers can sell and transport live 'coons to sportsmen and sportsmen's clubs in western North Carolina. One half the purchase price is paid by the Commission.

Before restocking 'coons, however, it is a very good idea to make sure a favorable habitat is available, else the 'coons will migrate to a more suitable area. A 'coon must either have hollow trees available, or a den of some kind. Where natural facilities are lacking, 'coons have been successfully restocked by putting wooden boxes in trees to serve as dens. Br'er Coon is not very hard to please when it comes to sleeping and eating. But the essentials must be available before this game animal becomes a permanent resident.

Beaver became extinct in North Carolina in the early 1900's. Through restocking and protection, the Game Division has succeeded in re-establishing this valuable animal in North Carolina. Beaver numbers have increased considerably in the Sandhills section and may now be found in limited numbers in other sections of the state where they have been recently restocked. These valuable fur animals are being restocked where suitable habitat is available, upon request of the local landowners.

The restoration of big game in the state is an extensive project. Deer have a low reproductive rate; their food requirements are high. They are very scarce except in fairly inaccessible areas of swamp and mountain.

Restocking becomes a major part of deer restoration, but as pointed out, efforts will not be successful if the habitat is not favorable. The Wildlife Commission buys, leases, or manages cooperatively with the U. S. Forest Service, large deer restoration areas. The Game Division stocks these areas with deer. Some are trapped in other sections by game personnel and some are imported from other states. Favorable habitat conditions are provided by clearing and planting, encouraging shrubby growth by release cuttings, putting out salt blocks, and protecting the deer from fire, dogs, and illegal hunting. The good cover, food, and protected conditions cause a quick build-up of the deer popula-

•——————See GAME DIVISION Page 15

Excellent small game habitat has been created here by establishing bicolor and sericea lespedeza along the edge of the field.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Wildlife Commission to Set Hunting Rules June 14

On June 14 the Wildlife Resources Commission will meet in Raleigh to set the official regulations for the 1954-1955 hunting and trapping season. The regulations will be set on the basis of ideas and opinions expressed by sportsmen at a series of nine public hearings held in each of the commission districts during late May and early June, plus consideration for the availability and welfare of the various game and furbearing species.

* * * *

Rockfish Hatchery Sets All-Time Record

The Weldon Rockfish Hatchery, operated by the Wildlife Resources Commission this spring set an all-time high in rockfish fry production with a total hatch of more than 33,000,000 eggs. Much credit for this year's tremendous production is due to the excellent cooperation of sport and commercial anglers in bringing in spawner fish.

* * * *

BETTER FISHING – A New Movie on Tar Heel Warm Water Fishing and Fish Management

By June 15 at least 12 prints of the first motion picture of its kind ever produced will be ready for distribution to any groups desiring to see the film. The picture deals with the problems involved in the management of such warm water fish as bass, bream, and walleye pike, with plenty of splendid entertainment in examples of excellent fishing. The film was produced entirely by Commission personnel, with the addition of a sound track, final cutting, and optical effects done by the Calvin Company of Kansas City, Missouri.

Bookings for the film will be made on a first come first served basis, and release rights for television have been secured.

* * * *

Trout License Meets General Approval

Information received from Wildlife Protectors in mountain trout fishing counties indicate that trout anglers generally favor the new trout fishing license which went into effect for the first time in North Carolina this year. Although a number of arrests have been made for fishing trout without the license, these came as a result of oversight or lack of information on the part of the persons involved.

KERR DAM

Lampreys

by J. H. Cornell

Sketches by Duane Raver

It's a fact! North Carolina has them—the Kerr Dam Lampreys! When they stayed in the ocean where they are supposed to be, we were not surprised to hear of occasional fish being killed by lamprey predation. When they moved into the Great Lakes and raised havoc with the whitefish fishery, we could lean back in a chair and read about it with academic interest. Now, out of a clear sky, we find what appears to be a major invasion of the sea lamprey, *Petromyzon marinus,* in Kerr Reservoir.

It used to be that we could read from Breder's book on marine fishes, with some comfort, that the sea lamprey is "Known on the north Atlantic coast south to Chesapeake Bay, and rarely to Florida." We were in the "Rarely" part. It seemed reasonable that they never would be a problem here.

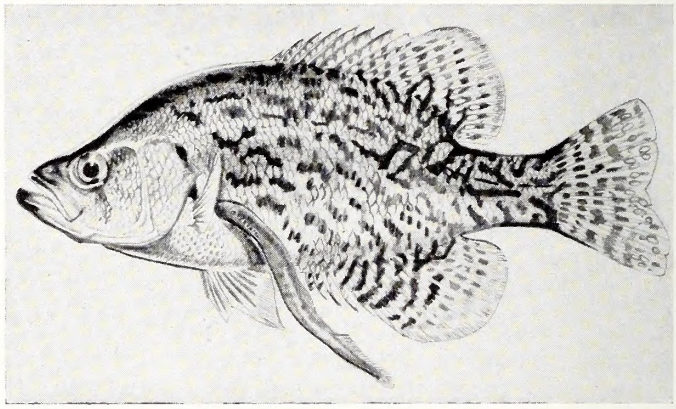
But now, with Kerr Dam closed scarcely two years, we find a major population of lampreys preying on the fish of the reservoir. They still are relatively scarce in the vicinity of Satterwhite Point, but are reported to be very numerous in the waters near Townsville Landing. Reports have ranged from "Three or four on every Crappie caught" to "A lamprey attached to every third or fourth Crappie caught." Even allowing for some slight exaggeration, there must be a lot of them.

The earliest reports, unaccompanied by specimens, indicated that they were some six to eight inches long. The description fitted the lamprey, and it was assumed that either the silver lamprey or the brook lamprey had been observed. Either reasonably could be present. Finally a specimen was received, and was tentatively identified as the sea lamprey. This identification later was confirmed by the N. C. State Museum.

The specimen observed, and those reported, are all too small to be the adult sea lamprey, but they could be the young of the species. If so, where are the larger ones? Those reported all seem to be in the six to nine inch size group, but the adult sea lamprey reaches a size of two to three feet. If the identification is correct, how did this lot of babies arrive in Kerr Reservoir?

Let's take a look at *P. marinus* and see how he lives. Normally he lives in salt water and, except for stray specimens, stays in the cooler part of the Atlantic ocean north of Cape Hatteras. The species is anadromous. That is, it normally lives in the ocean but migrates into fresh water streams to spawn. The individuals on the spawning run move upstream past all silt deposits until they come to clean waters flowing over beds of gravel. Here they build nests very similar to trout beds. Pebbles and small stones are removed from the nest by picking them up with the sucking mouth and carrying them away until a considerable depression is formed.

The eggs are heavy and sink to the bottom of the nest. They are so small that one female will lay upwards of a quarter million of them. And it is generally accepted



Note the lamprey attached behind the pectoral fin of this Crappie. Lampreys usually attach themselves to the softer parts of a fish.

that having accomplished this duty to insure the preservation of the species, the parents drift off down stream and die, and never do manage to return to the ocean. In this respect they are no different than the salmon of the Pacific, which spawn once and then die.

When the young hatch out, they do not look like the adults but are in a larval form called Ammocoetes. These larval lampreys, according to David Starr Jordan, are "blind, toothless, with a contracted mouth, in which the lower lip forms a lobe distinct from the upper." In this condition, they burrow into the gravel of their native stream and are believed to feed on microscopic organisms found there or carried to them by the current. In this condition they are commonly known as "sand eels," and are valued by the fisherman as bass bait.

After spending several years as Ammocoetes, and reaching a size of six inches or more, a complete metamorphosis takes place. As the caterpillar changes into a butterfly, so the Ammocoete changes into a lamprey eel. The eyes move to the surface and become functional. The mouth changes its shape into a suction cup lined with rasp-like teeth. The animal takes on its adult form and embarks on its predatory form of existence.

In this stage, its normal food is the blood and tissue of fishes. It attaches itself to the body wall of an unwilling victim and rasps a hole through the skin, suck-

ing in the blood and muscle tissue until it is full and drops off, or until the victim dies. Reasonably enough, the scaleless or soft-scaled fishes are the most frequent victims. The bullheads, the catfish, and the suckers are much more frequently attacked than the bass or the carp whose heavier scales provide some measure of protection.

Now so far as the young lampreys in Kerr Reservoir are concerned, they may have gotten there naturally. Smith's "Fishes of North Carolina," published in 1907, records larval lampreys six or eight inches long and adults two or three feet long caught in shad seines in Albemarle Sound. It states further that the species is less abundant than in more northern waters.

It is at least possible that prior to the construction of Kerr dam there was an annual migration of sea lampreys up the Roanoke River to the reaches which now comprise the reservoir, and that spawning took place in the tributary streams. It is possible that each year a group of Ammocoetes, which were several years old and were ready to assume the adult form, migrated downstream and reached maturity in the ocean. Suppose that were true. The construction of the dam could cut off the normal downstream migration and restrict the entire year class to the reservoir area. This could account for the fact that no large specimens have been reported. On this same assumption, there likely may be several more year classes in the larval form in the tributary streams of the reservoir.

The only trouble with this assumption is that there are many long miles of the Roanoke River from Clarksville, Virginia, to the Atlantic Ocean. Possibly too many. The herring and shad and rock which come up the Roanoke bear no lamprey scars to show evidence of predation along the way. There are no reports of lampreys being taken in the nets in the Weldon vicinity. How could they reach the upper part of the river without being observed?

Another real possibility is that they have been imported from northern waters inadvertently. Neither Virginia nor North Carolina has any sort of control over the importation of non-game fish. In recent years, particularly in the piedmont section of the two states, commercial carp and catfish ponds have become very popular. The pond owner buys a truck load of carp and cats, most often from northern sources, and pours them in his pond. His customers then pay a fixed fee for fishing plus a per-pound fee for the catch.

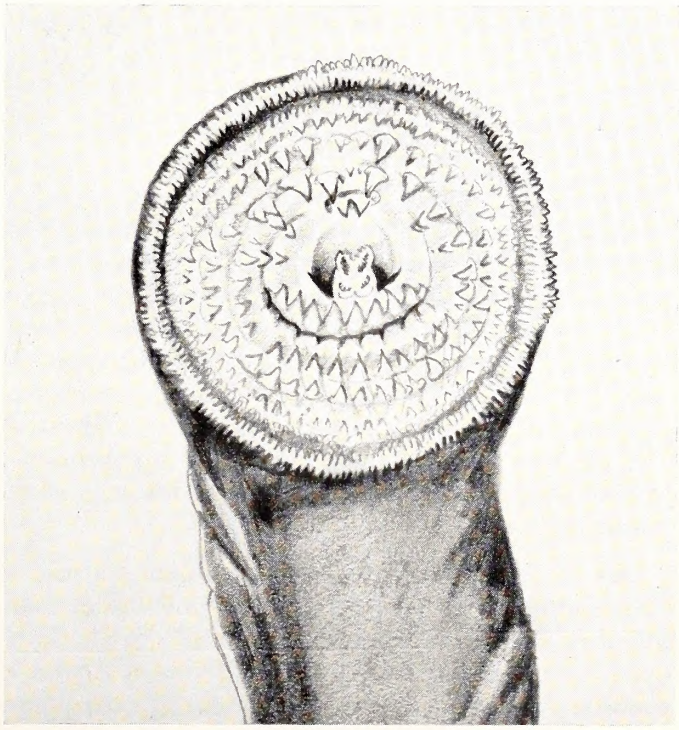
Some of the fish truck operators are so unscrupulous as to palm off blackfish or grindle to unsuspecting pond owners as "Northern Pike." There is little reason to believe that they would be worried about a few lampreys in the load of fish they deliver. And since so many of the loads of fish come from the Great Lakes region where the lamprey is now common, it is hard to believe that none ever have been imported by this method. This possibility has been suspected for several years, following requests for help by pond owners who have described big open sores on the sides of the catfish they have bought.

Unfortunately, the lamprey easily becomes landlocked. Unlike the striped bass, which seems to have the requirement of returning to salt water between breeding seasons, the lamprey seems perfectly content to remain in fresh water all of his life. In some of the lakes of western and central New York, and particularly in Lake Cayuga, there is a landlocked race of sea lampreys which has a somewhat different color than the typical sea lamprey and which matures at a considerably smaller size. It is reported by Schrenkeisen as preying on everything from catfish and bullheads to bass and carp and chain pickerel.

And so we have two possible methods by which the introduction may have taken place. It now remains to be seen whether or not they will become established. If the first assumption was correct, there likely are suitable spawning sites available and a landlocked population may develop. If the second assumption accounts for the introduction, then it remains to be seen that suitable streams for spawning are available in the vicinity of the reservoir. Only time will tell whether the population will expand or gradually pass from existence.

Nearly twenty years ago, Schrenkeisen said "to rid a lake of these fish, they must be trapped and killed when migrating up the small streams to spawn." That idea has not been improved upon to this time. The extensive work being done in the Great Lakes region, where the Canadian and United States governments, as

•——————See LAMPREYS Page 21



The buccal cavity, or mouth, of the lamprey is a suction cup filled with sharp rasping teeth.

The DEEP

by C

The Underwater World is a Fabulous Pla

The deep-tanned swimmer surfaced in the gray Carolina coastal water. His face barely broke water, but in a split second lungs were refilled and a virtual human fish was again plummeting for the bottom. No ripple or wake followed his descent. Twelve feet down his outline appeared distorted and grotesque against the bottom growth. His undulating foot movements propelled him steadily and carefully over the bottom in a seemingly endless dive. Not incongruous was his presence in this underwater set, so guarded were his movements. From the array of sea life within the diver's view a gamefish appeared, confidently pursuing a handful of scurrying sea worms. A slender shaft of steel streaked from the undersea archer's hand and bore down upon the target. Seconds later the skin-diver surfaced, struggling to retain his catch. It was the gill and mandible regions of the ugly head the three-eighths inch spear had impaled—with most conclusive effect.

Thus is the fishing, or the hunt, of the spear-fisher. Practiced from Bermuda to Tahiti and known by several designations, the sport has a curiously gripping appeal to sportsmen who chance to don a face-plate or goggles and venture into adequately clear and lighted waters. By the testimony of many spear fishermen, the appeal of the sport is largely in that it combines the element of exploring the unknown and the unique, as well as pitting the human element against that of the game in a situation which is anything but to the advantage of the hunter.

Not to be considered lightly is the diving aspect of spear-fishing, much less the rigors of underwater hunting after the skin diving technique is adequately developed. In any basic attempt at skin diving it is well to consider the impracticality and danger of attempting underwater descents in any but reasonably clear and still water. The actual hunt, whether pursued with the simple hand harpoon or the expensive and elaborate catapults found on today's market, can follow only after considerable diving strength and skill is attained.

From the onset of the conditioning for the dive certain mechanical aids prove of extreme benefit both from the comfort and performance aspects. The common face-plate, being generally superior to watertight goggles, is the basic accessory. Without protection the underwater scene is hopelessly distorted to the human eye, which in turn suffers ill effects from exposure over long periods to either salt or fresh water. Although purely discretionary, a pair of rubber swim-fins to be affixed to the feet increase dramatically the speed and maneuverability of the underwater swimmer.

For the novice diver there only remains the selection of a suitable body of water for practice dives. Dark and muddied waters must obviously be carefully avoided, for a blind dive is open invitation to disaster. As for rivers and silt-filled harbors, these are the areas most dreaded by the professional diver in full suit! Coastal waters should receive the same scrutiny as inland bodies, and turbulent areas should be ruled out. They produce dangerous subsurface currents and poor visibility. A fruitful field for diving lies in countless inland lakes and expanses of coastal waters offering none of the above hazardous conditions.

The non-swimmer, surprisingly enough, often masters a surface dive from waist-deep water even before the

Art by Duane Raver

HUNT

Beauty, Endless Variety, and Keen Adventure

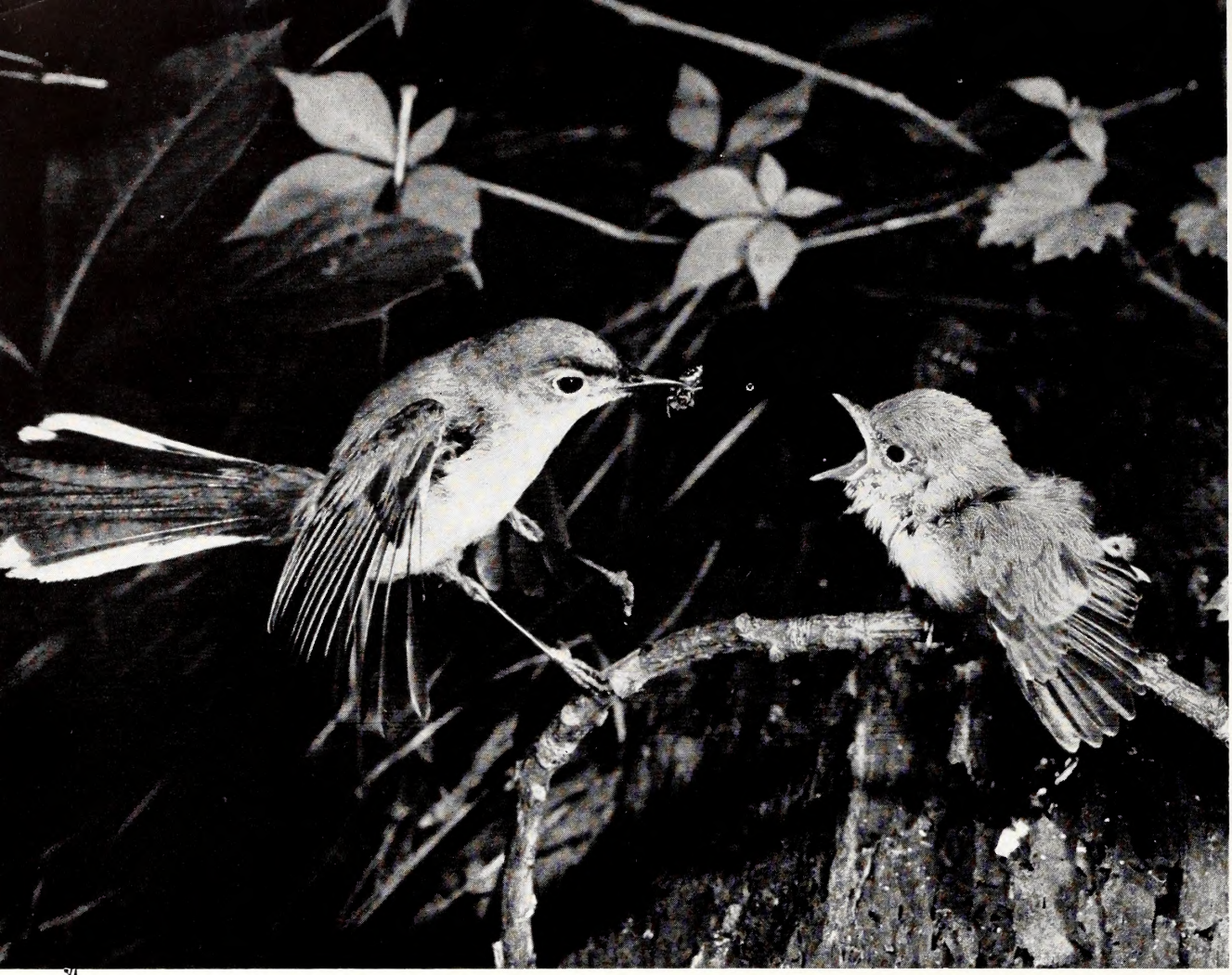
initial fear of free-floating has been dispelled. This underwater play does much to eliminate thrashing and grasping motions that upset surface equilibrium and quickly spots the true propulsive value of arm and leg movements. Breath control is of course the prime consideration in skin diving and beginning duckings should be timed by frequency of breath demand, and this alone. Like the nose and ears however, the lungs quickly adapt to immersion periods of increasing duration with no breath-control training or practice whatever. A short cut to increased lung capacity, however, will be noted in graduated inhalations and exhalations, never quite emptying or filling the lungs to the painful point. This activity is related to the involuntary nervous system and cannot be speeded in development. It must simply be trained into the human organism by practice.

As the diver will discover, the breast stroke best fills the needs of the dive and among spear-fishermen this method of reaching the depths is universally accepted and practiced. It seems to require less expenditure of energy, and oxygen, to trail the arms as much as possible after the working depth is reached and use a narrow flutter-kick for traveling. This position, too, allows the fishing gear to trail at the side, ready for instant use yet offering little water resistance to the swimmer. The swimming motions must become supple and relaxed if the dives are to be tireless and comfortable. As breath demands, the swimmer has merely to plane head and trunk upward and aid slightly his natural buoyant qualities for an effortless return to the surface. For the sake of the game the surfacing should be as brief and quiet as possible for to aquatic eyes below any surface disturbance can be detected for hundreds of yards and the diver may find his hunting resultingly poor. Upon surfacing and regaining his breath, the diver can noiselessly submerge by inclining his body slowly forward to a few inches below the surface and utilize one or two strong crawl strokes to clear the feet of surface water before entering the full stroke.

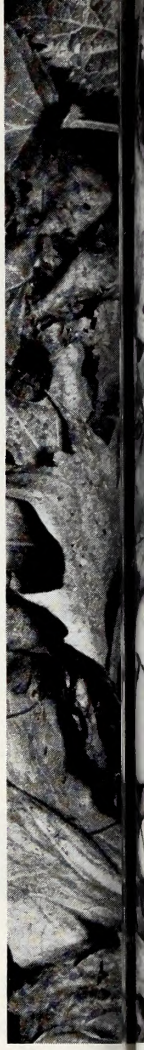
Whether the setting be the Atlantic or the Pacific oceans or a placid inland lake, the swimmer will probably be enthralled with his first glimpse of subsurface life. The face-plate becomes a window through which fleeting glimpses of another world enticingly appear. It is among the vivid corals and brilliant shellgrowth the gamefish is found. Here exists the cruel cycle of sea life where, in the course of seconds, the diver can witness the endless chain wherein the weaker falls to the stronger; where the smaller inevitably ends in the stomach of the larger in what is a succession of frightening rapidity. Not infrequently will a delicate goldfish-like hunter catch a tiny mollusk in an action that attracts the deadly attention of a nearby crab who, in the third step, is instantly scooped up by a lipfish, shredded, and exoskeleton expelled again to settle unnoticed in the sand of the arena. So regular and rapid is this cycle that observers of marine life wonder that any but the huge predatory species exist at all. Yet the game is there, fleetingly alive, elusive and in more than satisfying numbers.

Rocky shorelines, breaker areas and extremely shallow waters do not usually prove fruitful for the marine hunter. Nor do they add to the pleasure or safety of the dive. A breaker sends a virtual shower of sand and shells upon the diver and the resulting undercurrents eagerly

•——————See DEEP HUNT Page 20



A baby bird's open mouth makes a fine red target, and this blue-gray gnatcatcher will score a bullseye with an insect when it lands. In appearance, the gnatcatcher is a mockingbird in miniature. Young birds are dependent upon their parents for sometime after leaving the nest.



Here is a s
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ward. The

Glimpses OF THE Nesting Season

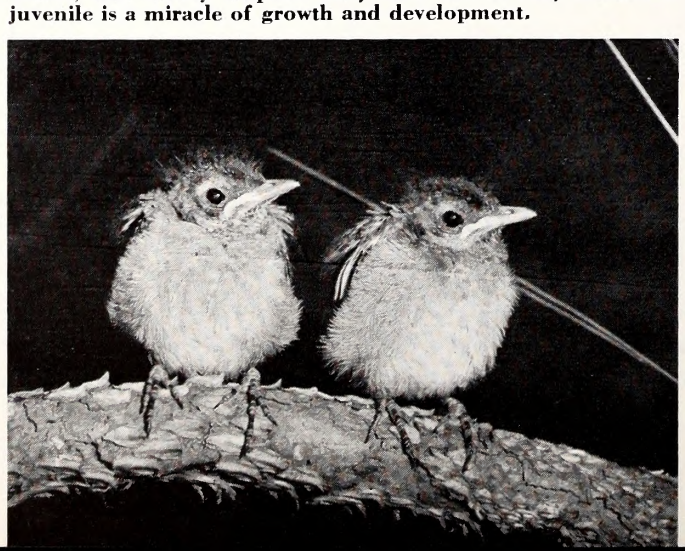
Photo Feature by JACK DERMID

It is a busy time for birds. The all important task
one, and from early spring into summer, the who

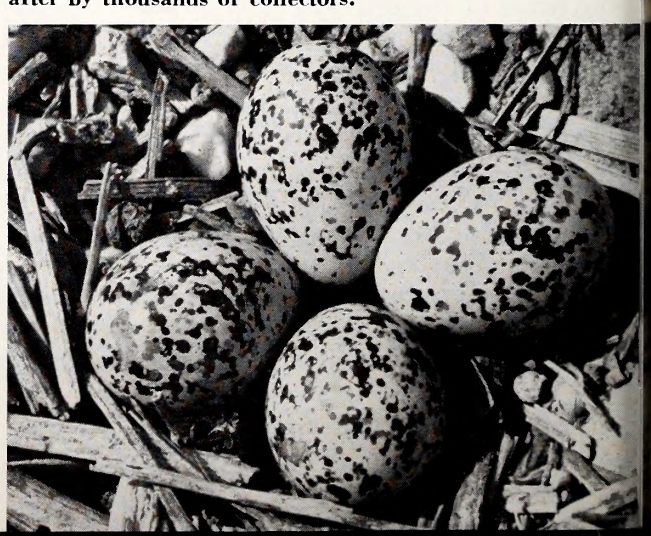
The nesting season begins with a song—when
when the young become of age. There is a fast mo
build and precious eggs to lay and incubate. There
spring storms to withstand, and gallant, but often l
cats, and other predators. There is the excitement
cramming bits of food into bottomless mouths, and

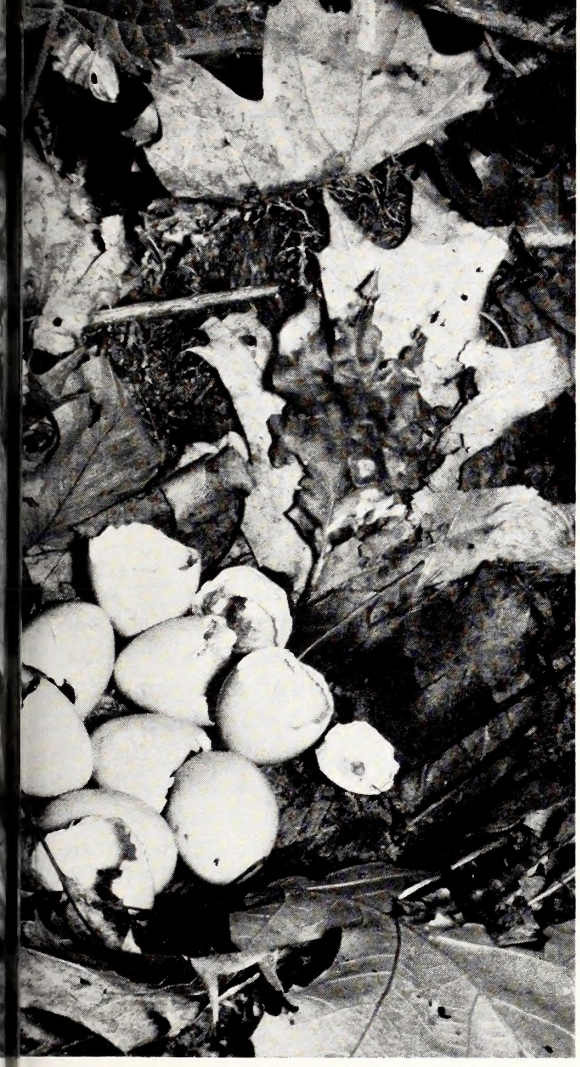
The events of the nesting season combine to p
these photos are a prevue of some of the sights no

Twin catbirds. The rapid transformation of a tiny, practically naked, and utterly helpless baby bird into a fully feathered juvenile is a miracle of growth and development.



**Killdeer's nest. Bird eggs are objects of exquisite beauty
before the enactment of protective laws were avidly sou
after by thousands of collectors.**





ull hunters—a successful ruffed grouse's nest. Eight and the chicks followed the hen away shortly after- d in Ashe county within ten feet of a country road.

ng the land with new life is a demanding s a continuous circus of avian activity.

gins proclaiming his territory—and ends f events in between. There are nests to tween rival suitors, courtship displays, to wage against snakes, stray dogs, roving g clutch of eggs, the never ending job of st timid flight of the new born.

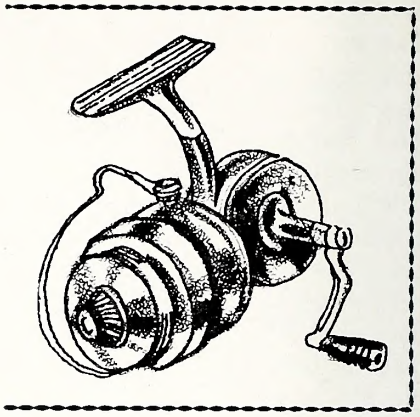
of the grandest of Nature's shows, and d in your own backyard.

house or country bridge is complete without a phoebe's mud and moss. The phoebe calls its own name when .

Wood thrush. It takes many trips to the nest and a lot of insects to satisfy a growing set of youngsters. Birds are an important check on harmful insect populations.

Incubating chipping sparrow. The eggs will hatch and the young will leave the nest long before the grapes ripen. The black and white eye stripes are marks of identification.

WHAT ABOUT *Spinning?*



by Duane Raver
Sketches by the Author

Here's something many people have been wanting to see published —an authoritative story about the pros and cons of spinning tackle.

If you are a fisherman and do not already own spinning tackle, the chances are good that you either will have a spinning rod before this season is up, or that at least you would certainly like to have a new outfit. But if you are like some of us were five years ago, you are wondering whether that "new fangled gadget" really performs like the books say it does. Maybe we can clear up a point or two about spinning tackle and spin-fishing in the next page or two.

Actually spinning isn't so new in the angling world. The British and continental Europeans have used the principal of "thread-lining" for many years and it has been with us in the United States for at least ten years. The ideas and principals back of spinning are sound and well thought-out. The tackle is finely engineered and designed, and most of the bad features have been eliminated. The years spent in developing this tackle for the American market have been full of changes and revisions based on the basic spinning design. You can have complete assurance that you are getting your money's worth of top quality merchandise when you buy from the leaders in American fishing tackle such as Heddon, Shakespeare and others. For example, Heddon does not release any tackle, even the smallest lures until the items have undergone extensive field tests by fishermen on Heddon's staff. So don't worry about spinning tackle being thrown together by any of these big-name manufacturers.

Will you like spinning? After all, a complete fresh-water outfit may run around $50, and to most of us that means wearing the same suit another year or a couple fewer trips to the beach. We can't say, of course, whether or not you will be sold on spinning after your first two or three trips. We can say that thousands of average fly and bait rod fishermen have taken to this recent development like kittens to catnip. They haven't put the other tackle in the attic and neither will you; but unless we guess wrong, you will find yourself reaching for the spinning rod more often than the shorter casting rod. About the best way to discover whether spinning is your dish, is to try an outfit for a day or two. No amount of reel-handle twirling or rod swishing over the tackle counter will tell you what it's like on your favorite fishing water.

What tackle should you buy? Speaking in generalities, we would suggest (for fresh water) a seven-foot, tubular glass rod with light or medium action, and open type, full-bail pickup reel, with four or six pound test monofilament line. Specifically, such an outfit might include Heddon's No. 120 "Pal" spinning rod (the two piece rod is easier to transport), and their model 250 "Spin Pal" reel. Solid glass rods are satisfactory and may be more durable when large fish or salt water angling come into the picture. Tubular steel has no great advantages over glass, and it seems to be losing the popularity battle to the glass sticks. However, if you find a steel model that suits you, stick with it. Split bamboo is a poor third.

New monofilament lines of nylon are being made softer and more pliable every year and they seem to have it over the braided types in several departments. Four-pound test is surprisingly strong and will handle most fresh-water fishing duties. Its main drawback is in brushy, stumpy water where snags will take the deep-running lures away from you. Six-pound test does not cast as far with light lures but gives a little more security in snaggy water.

Will spinning really catch more fish? You may have heard of some states outlawing spinning tackle because of the deadliness of such equipment. Some anglers claim it's "unethical" and some even say it's "unsportsmanlike" to use it. Whether spinning is all this miraculous on fish is strictly a matter of opinion. The smaller lures, longer casts, less visible line and longer rod give this method certain advantages over the casting rod, and under any given conditions might hook and land more fish. However, a light casting rod, nylon leader and the same small lures should do every bit as well as the spinning tackle. It follows that ten per cent more fish will be caught if the lure is in the water ten per cent more of the time. Thus you probably will find with the longer casts and no backlashes of spinning, the law of averages is more on your side with spinning tackle. The primary secret of success of threadline angling lies in the use of smaller lures; lures that imitate more closely minnows, salamanders, frogs and large insects. If light casting tackle will handle these same lures with the same distance and accuracy, fine; but

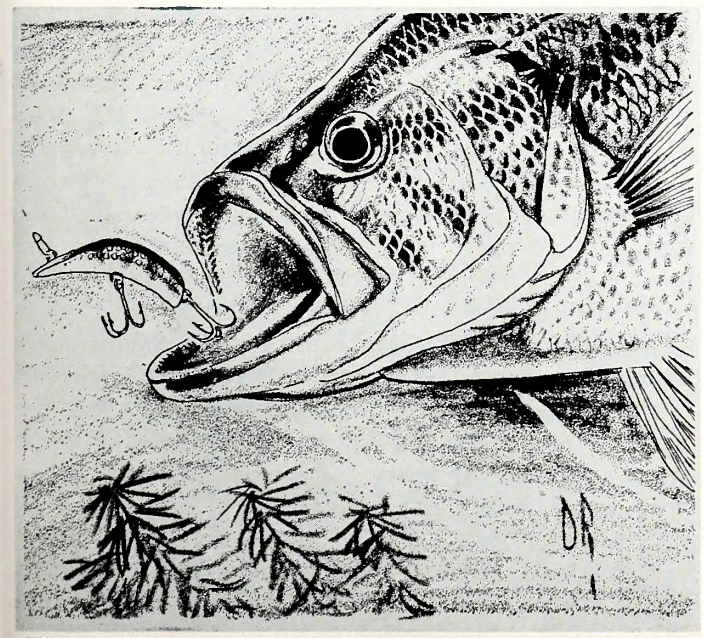
most bait-rod outfits won't and thus, the spinning gear. The smaller plugs hit the water with less commotion and retrieve in a more life-like manner than do the bigger baits. Tiny spoons and spinners have the added flash that may mean success. Spinning baits disprove the theory that "the bigger the lure, the bigger the fish."

Spinning probably won't take any more bluegills, crappies or other small panfish than will the fly rod; but big crappies, bass, walleyes, pickerel and even channel catfish fall for spin fishing in greater numbers than they do for other tackle. It takes a very high wind to make it impossible to spin cast; while at these times the fly rodder heads for the club house and the bait caster either casts with the wind or resigns himself to picking out backlashes every other cast.

No back-cast room is necessary for the spin fisherman; an effortless flip, and the smallest of lures sails many yards. The fly fisherman finds it necessary to false-cast several times before the fly lands out a maximum of 60 to 70 feet; and then if a low-hanging limb reaches out . . . oops!

How about spinning lures? Many such lures are conspicuous by their ability to scare fish away rather than catch them. Most of the plug type lures will take fish when the fish are cooperative; when they aren't hitting, it takes real skill and proven lures to hang them. Stick to the smaller brothers of the time-tested lures: River-Runt, Lazy Ike, Plunker, and so on. The best by far that we've found for all-around spinning for every type of fish that eats minnows (and this is just about all of them) is the Lazy Ike in the number two size, black-scale or silver finish. Spinners and spoons are quite good, and even the salamander or eel-type lures work nicely. Some fly-spinner combinations with pork rind pick up fish when others draw blanks.

Spinning, then, is not a compromise between fly fishing and bait casting. It doesn't fill all needs but actually is a different and separate method. Spinning is here to stay, but so are fly fishing, casting and still fishing. If you try spinning (and by all means do), give these tips a try: stick to monofilament lines of four- or six-pound test. Use a tiny snap-swivel for fastening on the lure. Dress up spoons with a short strip of pork rind, and keep the metal polished. Cast easily and slowly, covering the water at all depths. Keep all hooks sharp and strike firmly to hook the fish securely. Try salt-water spinning in the surf and the sounds, and be ready for the thrill of your life. Hit the trout streams and find out how the big browns go for spinning lures. Know your tackle and use it correctly. Know your fish and meet them on their own grounds.



The small lures used in spin-fishing are very effective for most game fish.

GAME DIVISION

from page 6

tion. After a five year protection period, the area is opened to hunting. Some of the expanding population also moves out into the surrounding country, making hunting available to sportsmen who prefer to hunt on private land. The restoration area not only serves as a source of supply for adjacent areas, it provides surplus deer that can be trapped for restocking in other areas having suitable habitat.

The Wildlife Commission also owns, or manages cooperatively with federal agencies, various wildlife management areas located throughout the state on lands that are of very little industrial or agricultural value. The Game Division maintains a favorable habitat for all game species present. Most of the bear and wild boar in western North Carolina are found on these areas, which offer food, cover, and protection from man's destructiveness. After the game populations have reached a safe level, managed hunts are conducted to allow the public to harvest the surplus game. The personnel of the management areas keep records of the number and type of game killed. They study kills for age, weight, and general condition, which gives some indication of the conditions of the habitat and the game populations. The management areas provide a wealth of research information which can be applied to game management in other locations by landowners, sportsmen, and the Game Division.

By way of summary it might be fitting to note that a new crop has been added to North Carolina's already impressive list. The Game Division is doing a creditable job of furnishing recommendations for managing this crop, as well as providing material aid to cooperating landowners and sportsmen. Its game restoration program and conducted hunts on management areas combine with its many other public services to provide the citizenry of North Carolina with "MORE SPORT FOR MORE PEOPLE . . . EQUAL OPPORTUNITY FOR ALL."

Report of Rabies Control Program

by Walter C. Humbert, M.D.
Director, Pitt County Health Department

Photos by Roy Hardee

Pitt County's Rabies Control Program protects people, livestock, and wildlife.

Pitt county dog wardens, Willie Bell and John Anderson, with their dog collecting trucks.

History

The Pitt county organized Rabies Control Program dates back to August, 1952, when at that time the Pitt County Board of Commissioners, following authority granted by the North Carolina Legislature, decided to inaugurate a full time program and asked the Pitt County Health Department to administer and direct the program.

On September 1, 1952, a full time dog warden, Mr. Willie Bell of the Belvoir community, Pitt county, was employed. That month for the first time in the county a systematic program of stray and nuisance dog control was commenced. Mr. Bell started patroling on routine and regular route the roads and communities of the county. He began to give public information and education relative to the new program. Mr. Bell operated and was given a desk in the Health Department under the direction of Doctor Walter C. Humbert, Director of the Health Department, and Mr. W. L. Pate, Senior Sanitarian.

Plans were made for a vaccination clinic to be held in the spring of 1953. In the beginning the program was slow in getting started, and because there had not been such a program before, the general public was not enthusiastic about it. During the latter part of 1952 there were numerous reports of stray dogs destroying live stock, sheep, and poultry. Hardly a month went by without a mail man being bitten.

In January, 1953, the Mayor and Aldermen of Greenville, who were operating a separate program, approached the County Health Department and asked them to administer and direct the city program. The city dog warden at that time was maintaining a small pound and trying to operate a dog program in Greenville. The request of the Mayor and Aldermen of Greenville was accepted as a trial measure and in February, the rabies and stray dog control program of Greenville and Pitt county was combined under the auspices of the health department.

A city and county-wide vaccination program was carried on in March, 1953, at which time around 3,700 dogs were vaccinated. This was the first organized rabies control program with clinics in the county. All vaccinations were done by licensed doctors of veterinary medicine. The team for the clinics was composed of a veterinarian, a dog warden, and a clerk. In July, following a change in government for the City of Greenville, the new mayor and city council requested the Pitt County Board of Commissioners and the Pitt County Health Department to take over and combine the city program with the county program. Up to that time the two dog wardens operated separately in their own jurisdiction. In August, the County commissioners employed a second full time dog warden, Mr. John Anderson of the Meadowbrook community, Greenville. The mayor and council of Greenville made an approach to the county commissioners to finance their end of the program. In other words, they were purchasing this service from the county commissioners. The two dog wardens in order to have official recognition, after recommendation of the sheriff of Pitt county, were appointed constables. Therefore, they now had full authority to make arrests when necessary. Mr. Bell, the senior dog warden, was given responsibility for the county and Mr. Anderson was given responsibility for the city of Greenville. The two dog wardens to work together as a team either in Greenville and the rural areas of the county or in the other incorporated towns in the county. The city government and police of the other towns immediately gave full cooperation to the dog wardens in their work.

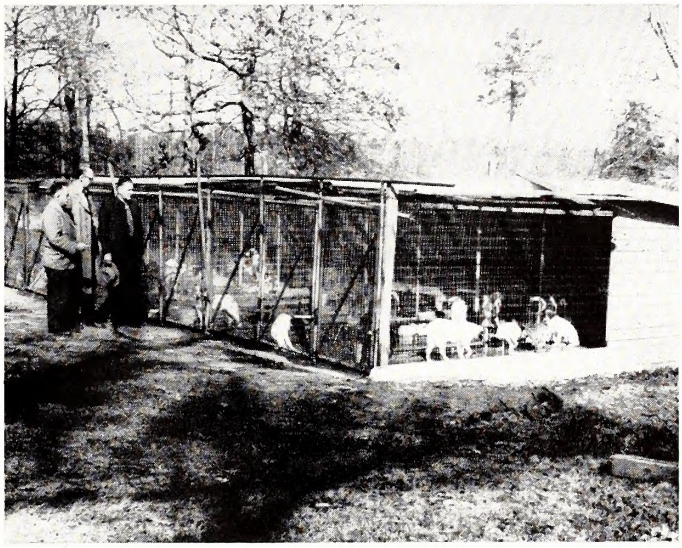
The success of using veterinarians in the 1953 vaccination clinics was so outstanding that it was decided to only have veterinarians vaccinate the dogs in future clinics. Therefore, from the middle of 1953, Pitt county had ceased to use lay persons for the vaccination of dogs. As 1953 progressed, there were less and less reports of live stock being destroyed and less reports of dog bites.

Pitt county, since 1950, had had no reports of rabid dogs and this program was started in order to keep the county free of rabies. At the end of the year the reports of the rabies control program showed as follows: 1,948 dogs had been impounded, 93 had been released to their owners or to new owners. A total of 1,974 stray or unclaimed dogs were destroyed either through humane gassing, or by being unable to apprehend, were shot. 49 dog bites were investigated, 49 apprehended and quarantined, 5 dog heads examined for rabies, but no dog heads were positive for rabies. One hundred and ten stray cats were apprehended and destroyed. In addition, 2,265 dogs were found in a survey following the March clinics to be needing vaccination and these dogs were vaccinated, making a total of dogs vaccinated in Pitt county for 1953, through the auspices of the organized program, 5,965. In addition, there were approximately 1,000 dogs vaccinated by veterinarians outside the county not participating in the program, making a total of nearly 7,000 dogs vaccinated.

With the help of the Pitt County Auditor, Mr. Reginald Gray, a system was set up in January, 1954, whereby all persons declaring dogs for tax purposes were given a Pitt county tag showing the registration number. In this manner, an accurate registration of dogs in the county was started. Prior to this system, the most dogs ever registered was 5,000. With the new system 8,500 dogs were registered in the month of January on the official books of Pitt county.

The annual vaccination clinics in 1954 were moved up from March to February and the clinics began February 1. Prior to the clinics, over 18,000 clinic schedules were mailed or distributed to all box holders in the county, public schools, and many public places. Besides these schedules, large card boards giving a schedule of the clinics were distributed in stores and cross roads and other places throughout the county. The population of Pitt county through newspaper articles, radio and TV programs were given sufficient information and education concerning the importance of county-wide participation in a vaccination clinic for the control of rabies.

As a result, 6,654 dogs were vaccinated by March 1, 1954. As this was just the second year of the program, it was not anticipated that all the dogs would be vaccinated during the clinics, but the turn out of people with their dogs during the month of February was much greater than had been anticipated.



Dr. Walter C. Humbert (center), Health Department Director, and the county dog wardens inspect Pitt county's modern holding kennels.

Following the rabies clinics, the dog wardens will make a house to house survey for unvaccinated and unregistered dogs.

Operation

The program in Pitt county is unique in that the program has been financed entirely by dog owners. Revenue resulting to the city of Greenville through dog licenses and to the county commissioners through tax assessments of dog owners has been sufficient to pay all the costs involved.

Mr. Bell and Mr. Anderson are a part of the staff of the Pitt County Health Department and report directly to Mr. W. M. Pate, Senior Sanitarian. They have their schedules each day and also answer all complaints as soon as they are called in to the Health Department. Mrs. Virginia Greene, clerk, in the sanitarian's office, takes the calls and relays them to the dog wardens who phone in twice a day for any complaint calls. Dogs that are picked up without collar or without any identification are taken to a sanitary dog pound that is operated by the program on ground owned by the county. The pound was designed and built to give adequate impounding of the dogs collected, with isolation pens for dogs suspected of having rabies, a water well was dug and a pump installed to afford adequate water supply, the floor was made of poured concrete with an adequate drain to a sanitary septic tank and a field line. Runways sufficient to give the dogs exercise, and wood beds with straw for bedding, water and balanced food are available to the dogs. All dogs brought into the pound are kept ten days and then humanely gassed unless the dog is claimed by its owner or released to a new owner. A modern air tight gas chamber using calcium cyanide gas was built in the dog pound. The use of this gas chamber has been found to be the most satisfactory and economical means of

•——————See RABIES Page 23

DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

For a number of years the Wildlife Commission has had frequent phone calls, postcards, letters and telegrams from various types of groups requesting motion picture films on fishing. At press time it was apparent that such a film would be completed and in circulation by the middle of this month.

June is a month for fishing. Bass have already started bedding, although it is still possible to get nice strings of them. Bream are at a peak of the season before the weather gets too hot for surface lure fishing. The mountains are at their best during June, with miles and miles of cool trout streams to add to the pleasure. On the coast Gulf Stream fishing is coming into its own. Piers are lined with anglers, and surfcasters are strung along the entire coast. Bottom fishing in the sounds is beginning to produce croakers, flounder, and other pan-size fish.

But about that movie on fishing: it was begun nearly three years ago, and the voice, musical background and optical effects were completed in May by the Calvin Corporation of Kansas City. The title is BETTER FISHING, and the film is the story of warm water fish management in North Carolina. The first part of the film deals with the problems that affect our fishing, and what can be done to solve them. This could be dull, but these sequences include some dramatic scenes and scenery, plus several hints as to what the viewer will see later on when the "payoff" begins. The last eight or ten minutes show the kind of fishing (for warm water species) we have occasionally in our state, and the kind we should and will have consistently when such things as silt and pollution and game-hogging have been licked.

The Commission plans to go to work immediately on a film dealing with mountain trout management and angling.

At least a dozen copies of "Better Fishing" will be put into immediate circulation, with a print assigned to each of the nine commission districts.

* * * *

We have a rigid, but not inflexible, policy against using letters that come in unsigned. We break the rule to pass this one along because it deals with a problem that concerns nearly every Tar Heel sportsman and land owner:

"Dear Sir:

Let me make it clear at the start that I am not a farmer and do not own one foot of land, but I am disgusted with the attitude some "sportsmen" have toward the farmer. All my life I have heard slighty remarks made about farmers who post their land. Doesn't anyone realize that a farm represents thousands of dollars earned by years of hard work? Shouldn't a man have the right to do exactly as he pleases with what he has bought and paid for without being criticized? Why should a farm family furnish food and cover for game animals the year 'round, only to have them all killed by strangers within a week after hunting season opens, or maybe a week before it opens? Maybe hunters help landowners to furnish food and cover in some sections of the state, but that's not the way it's done around here. They just fall out and start blasting the daylights out of every living thing in the woods as quick as it gets a little cool in the fall, and "to heck with anyone that doesn't like it" is their slogan.

Well, I've let off steam, I won't sign my name, as I don't want my dear fellow citizens to know just how much they appeal to me."

It is pleasing to report that there is a growing feeling of understanding and mutual cooperation between farmers and sportsmen, but it must be pointed out that there is still a long way to go.

* * * *

Thomas Sholar, Wallace, N. C. sends in a request for information that is typical of correspondence this time of year:

"Dear Sir:

Would like to have the rules on fresh water fishing such as size and live bait to be used, would like a list of game fish, and others. Would like to know whether there is a closed season on crows and hawks. Is it a violation to use a crow and hawk caller."

Mr. Sholar has been sent a copy of the 1954 fresh water fishing rules. The Commission prints and distributes these by the hundreds of thousands. As to the legality of hunting hawks and crows, the latter may

be hunted through the entire year without restriction as to bag limit as long as hunting license requirements are met and trespass rules obeyed. Hawk hunting is a little more complicated in that all but two hawks, the Coopers and sharpshinned, are protected by law. Most crow hunters find that a number of hawks come in to the calls and decoys, and a prudent crow hunter will be careful about killing protected hawks. There are no rules against using crow and hawk calls, except, perhaps, on Main Street at midnight.

* * * *

Some more folk rhymes about wildlife have come in. J. F. Hunter, Inez, N. C., submits this one:

"Possum up the simmon tree
Coonie in the holler
Catch him, little shaggy dog,
I'll give you a half dollar."

"Wildlifer" J. Wilmer Pancoast, Greensboro has another on the question of how much wood would a wood chuck chuck, plus coon and possum rhymes:

"How much wood would a wood chuck chuck
If a wood chuck would chuck wood!"
Why, a wood chuck would chuck all the wood he could chuck
If a wood chuck would chuck wood!"

* * * *

Possum's up the gum stump
Cooney's in the hollow
Willy's at the garden gate
Can't you hear him holler?

* * * *

Raccoon tail's a ring around
Ol' possum's tail is bare
A rabbit got no tail at all
Just a little bunch of hair";

In the hope of continuing to foster a spirit of tolerance and understanding among the various types of nimrods who enjoy the variety of sport in our state, we are passing along the remarks and the rhymes of Dr. J. Thomas Benbow.

East Bend:

"I enjoy reading WILDLIFE IN NORTH CAROLINA and read it from page to page. It appears to me that a certain percent of our sporting friends have become a little hysterical as to the fox and hawks. I have entered into quite a few conversations with the different types of sportsmen of our state. I am thoroughly convinced that we have at least three (3) types of sportsmen to consider. I will only mention the third class which is a class that feel that they are the only class that should be considered and that all laws should favor and protect their type of game which they are adapted to enjoy and hunt. The proper name for that type would be: "The Selfish Type," I have observed that every hunter who belongs to the "Selfish Type" has become or soon will become a: "Trigger Happy Hunter." His desire is to kill and if a hawk or fox beats him to the punch, his feathers become ruffled. One might say that the fox and the hawk belong to the same class. That is they both do some damage to small game and our domestic fowls which is greatly exaggerated by our selfish sportsmen but on the other hand they do much good and are considered as the farmer's friend.

"A natural born fox hunter never seeks to kill any kind of game. I know of quite a few who have released quail, pheasants, and rabbits in order to stock certain areas which are hunted by the selfish type or the "Trigger Happy Hunter" but I do not know of a Trigger Happy Hunter who ever attempted to stock an area where the game was scarce. However, there may be some who have. If we had a bounty on the fox, I could name a few Trigger Happy Hunters who would kill fox in an adjoining state and bring their scalps into N. C., to collect the bounty. Furthermore, it has been proven that the bounty system has never had any beneficial effect on predator control but that on every occasion has become a financial headache. The fox hunter enjoys his type of sport just as much as the man with a gun enjoys his type of sport and each should be willing to go 50-50 with the other, that is let each enjoy what God has given us to enjoy and not want to try to have everything just suit one class of sportsmen. If this trigger happy hunter would exert as much energy, spend as much money and provide enough feeding places for our small game as they have put forth to destroy the fox, they would have plenty of small game to shoot and kill and would not have to resort to shooting the fox in order to satisfy their desire to kill.

"Just leave a small patch of peas, here and there in the field and I can show you just as many coveys of quail as you have left these little patches. Take my advice and let the other fellow have a finger in the pie. Don't be a hog and want every sport to suit yourself. Let the other fellow enjoy his sport also."

Takin' It Easy

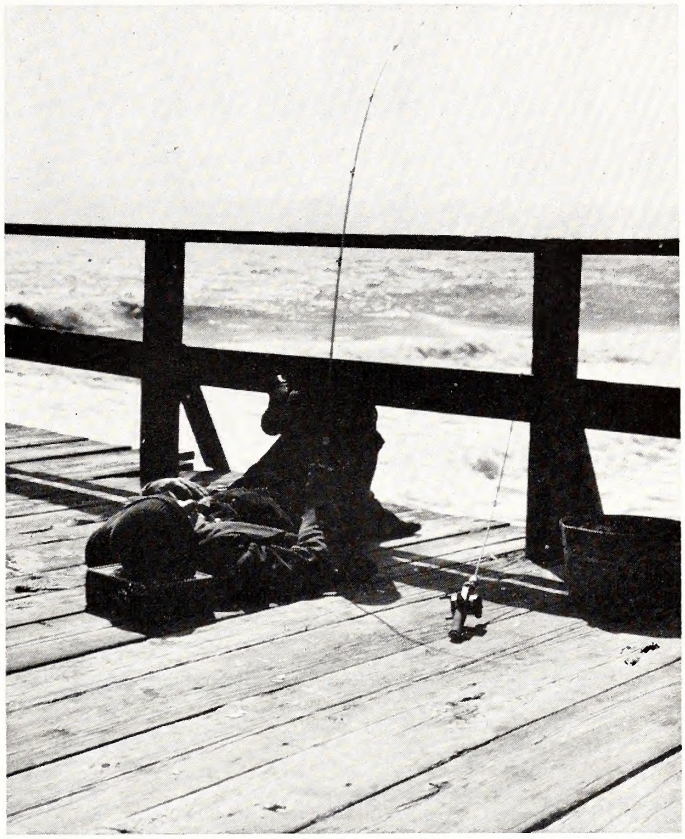


Photo by Rod Amundson

Warm sun, lazy breakers, and the awakening tug of a fish, who could ask for a better life? Good fishing is to be had from North Carolina's numerous ocean piers.

The Trigger Happy Sportsman

By J. Thomas Benbow

"At the first gray dawn and purple glow,
A pelt-hunter with a gun and hounds
Came up from the deep-foggy valley below,
To appear on our best running grounds.
"A fine red fox was the prize that he sought,
That for years had eluded all men;
Been trapped for, for years, but never caught,
And as yet, he was never run in.
"A fox so fleet as a deer on his feet,
He was beautiful, large and bold;
No hound could last in a race so fast,
That would make him take his hole.
"For miles around came hunters and hounds,
For to chase this cunning old lad;
To test their pluck, their speed and luck,
And everything else that they had.
"This fox never looked for a cave or den,
He would lead them for miles away;
Then away and back and away again,
For as long as they wanted to stay.
"This "Trigger-Happy-Type" there patiently stood,
Concealed on his favorite stand;
To wait for his pack to pick up the track,
Of the gamest old fox in the land.
"From a point on a knob like the curse of a mob,
Which was all without rhythm or rhyme;
They yelped and squalled, bellowed and bawled,
And picked the trail, one at a time.
"They wiggled and wormed over all kinds of ground,
Across ridges and hollows and rill
From the Reps Martin Bluff with a sniff and a snuff,
And up to the Old Pond hill.
"To that hunter's ears the music was clear,
He knew what had just taken place;
From each hounds throat came a harmony note,
For Old Reynard was up for a chase.
"Not a dodge nor a play but he led straight away,
Like an arrow, he was setting the pace;
Till the soft breeze sighed and the echoes died,
As if all swallowed up in the space.
"For an hour or more the music was o'er,
Save the birds with their chirp and song;
In his heart was a yearn for the pack to return,
And he knew that it wouldn't be long.
"Then far down the vale came an echoing wail
Like the cry of a flying night bird;
Then nearer and nearer the music grew clearer,
Until each ringing voice could be heard.
"On the pack drove through thicket and grove,
With a yelp and a squall and a grunt;
With each running hound holding its ground,
And all fighting hard for the front.
"On the pack came through the big woodland,
Over meadows, over cliffs and bars;
Down the long ridge to that pelt-hunter's stand,
With the speed of the shooting stars.
"The report of a gun rang o'er the hill,
And when the echoes ceased to resound;
That pelt-hunter stood beside his kill,
There bleeding and dead on the ground.
"It's coat was as red as the blood it had shed,
And its legs were as black as a crow;
The four inch tip on the end of its tail,
Was as white as the drifting snow.
"When this wild race had ended so brief,
And the hounds lay down for a rest;
A feeling of sadness some akin to grief,
Came over this pelt-hunter's breast.
"There alone, he felt forsaken,
A grief stricken heart he felt;
The blame of a life he had taken,
For only the price of a pelt.
"There in the silence of the morning,
He fought off his sorrow and shame;
He recalled memories of days gone by,
And lived them all over again.
"He called to his memory his favorite hound,
All his friends and their smiling face;
And many a favorite running ground,
And many a wonderful race.
"He thought of his fellow hunters,
With faces so cheery and bright;
With hearts as warm as the hunter's fire,
That burns through the hours of the night.
"He hoped—from a dream to awaken,
And to find that had only let live;
But alas! but alas! He had taken,
A life which he never can give.
"Then he prayed that there might be a place,
Prepared for an animal's soul;
Where this game old fox might run another race,
While the years of Eternity roll."

DEEP HUNT

from page 11

scrub any and everything over the waiting bottom. The serious spear-fisher can advantageously seek his game in the smooth clear water beyond the breaker areas and among the verdant growth carpeting our many sheltered coves and bays. The depth to which a diver probes in quest for ever-larger gamefish will be limited only by his particular endurance and stamina but depths in excess of thirty feet often produce curious nitrogen reactions, resulting from pressurized oxygen entering the bloodstream. At the worst a mild headache or dizziness will be first experienced but it is the serious counterpart of this condition, commonly referred to as the "bends," that plagues the professional diver after working at cruel depths.

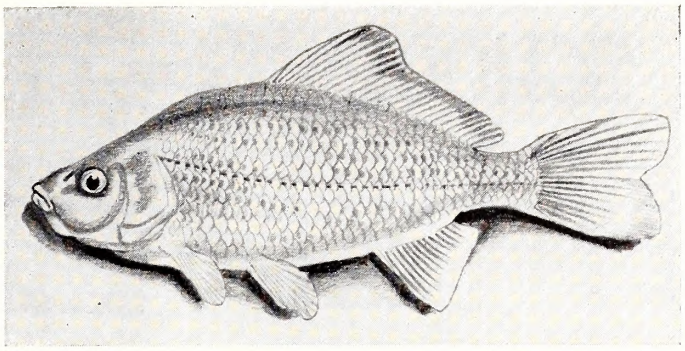
With an eye to the equipment of the spear fisherman we can gratefully conclude that here is a sport requiring only the minimum investment and, further, that good equipment for the dive is practically indestructible. Face-plates and diving fins are considered by many to be a once-in-a-lifetime investment, and indeed, in the Pacific diving colonies, face-plates often pass from one generation to another still in serviceable condition. With the exception of elaborate gas-fired catapults, the spear and launcher are as simple and inexpensive as a toy archery set. Many divers fish, or hunt as it were, for years with a simple bamboo and rubber launcher for the drill-rod spear which is pulled taught against the rubber cord, sling-shot like, and expelled through the bamboo tube. Simple and deadly, the above catapult will slam a spear into a wooden pile so deeply it cannot be extricated. Barbs are not generally employed on the impact end of the spear simply for the reason they are not necessary, so severe is the shock to a pierced fish. The pull-end of the spear, the end that receives the elastic cord, can be bludgeoned to a small, flat head which much facilitates underwater handling. There remains only a certain amount of practice to reach a surprising ability with this underwater archery. The discharged spear inevitably follows a gently descending arc through the water, carrying well into the range of the most skittish targets.

While a notoriously brisk pride abides among sportsmen for recognition of individual prowess with the gun and rod, a rather modest musing attitude pervades the demeanor of the seasoned spear-fisher where his successes are concerned. Could it be he loses his oneness with the above world as each dive reveals numberless species for his stalking? Could it be he feels an overwhelming smallness when pushing into unattainable depths? Could his gripping, yet calm, devotion to the underwater hunt be tempered so keenly because it is the unknown that beckons? It could!

The GOLDEN HORDE

by Charles Cadieux

Reprinted Courtesy Outdoor Life



Sketch by Duane Raver

Baltimore minnows are a growing menace to North Carolina ponds, lakes, and reservoirs. Baltimore minnows are nothing more than cull goldfish, those lacking color and cannot be retailed as goldfish. They are fine bait, but this story tells what happens when they are introduced to fishing waters. Under a recent agreement with the State of Virginia, Baltimore minnows (goldfish) have been banned from use for bait in John H. Kerr Reservoir.—The Editor

When goldfish are used for bait, some escape. Others are dumped at the end of a fishing session. So in a good many places they're banned as bait. If you've wondered why, listen to the tale of what happened at Amor Dam, near Bowman, N. Dak.

Amor Dam is a rock-and-earth structure that holds the spring run-off waters of a couple of creeks. Once it contained black bass and crappies. What happened to them shouldn't happen to a dogfish.

A local merchant stocked up heavily on goldfish, which didn't sell so good. Disgusted, he liberated several hundred of the fishbowl beauties in the waters behind Amor. Do you think rabbits multiply fast? They're not in the same class with goldfish when conditions are right. And evidently conditions were perfect in Amor.

After a few years the muddy waters began to flash gold and red in the sun. A couple of town drunks, it was said, took one look at the spectacle and joined Alcoholics Anonymous. But the goldfish were for real, all right—so much so they killed off the gamefish. After a while no one fished in Amor anymore.

The goldfish made use of their new privacy to raise large families. Young by the thousands were found when the North Dakota Game and Fish Department made seining tests. In short, the fancy cousins of the carp had ruined the lake. The only remedy, the department decided, was to kill everything in it with poison and then make a brand-new start. A rotenone derivative was chosen for the job. There was some skepticism that it would work, the doubting Thomases maintaining that the muddy waters of the lake would hold it in harmless suspension.

The poison was applied early one morning, and any question of its effectiveness was soon forgotten. Within minutes, minnows and small fish began to rise to the surface. The few bass that were left in Amor gave up the ghost early. They were of good size, and scale counts showed them to be three years old. But there were no young bass.

Then came the goldfish. In countless hundreds of thousands they began to show up on the surface. There were fish with yellow heads and pearly-white bodies. Some were a solid golden color, others a brick red. There were even a few with gold heads and yellow-and-black bodies. The lake surface seemed to be on fire as the fish skittered about in their dying struggles.

Thirty days later Amor was ready for restocking. Poison had been the antidote to the merchant's poor judgment. But using it is a pretty expensive method of fish management.

Moral: Give goldfish an inch and they'll take a lake. Do you still want to use them for bait?

LAMPREY

from page 9

well as the States concerned, are doing their best to cut down the lamprey populations, is based on the idea of removing the adults when they start on their spawning run.

If the lampreys in Kerr Reservoir have been identified correctly, and if they are the true sea lamprey, then it will be several years before they reach their mature size of two to three feet and are ready to start up the tributary streams on their first spawning run. Even then it will require a major effort on the part of both states to achieve any measurable control. And in the meantime, practical suggestions for reducing the lamprey population in Kerr Reservoir would be welcomed.

One author reports that lampreys are an important item of food in England, France, Germany, and Russia, and that "Lampreys pickled and put up in tins may be obtained of our larger American dealers in fishery products, and are said to be of very fine flavor." He also states that in earlier centuries they were highly esteemed as food, "the French regarding as an especial delicacy stewed lampreys which had been first drowned in wine." Perhaps we should catch some lampreys and give them a try. If we can't eat them, we can lend-lease them.

SCHOOL PAGE

Wildlife Quiz Answers

by Lunette Barber

Since the contest winners were announced in the May issue of WILDLIFE IN NORTH CAROLINA and school children were the only contestants, it seems that it is appropriate to use the school page to give the 9 statements which led to the introduction of the essay. The correct answer is checked, and there is a brief comment after each.

1. About 3%__X__, 5%____, 10%____, of all forest fires are caused by lightning. Contrary to popular belief, natural causes of forest fires are quite infrequent. Man-made fires—trash and field burning; smokers; hunters and campers; and incendiarists—amount to nearly 95% of all fires, and miscellaneous causes are included in the remaining 5% of the causes.

2. The deer____, gray squirrel__X__, cottontail rabbit ____, is the most popular wild mammal with North Carolina school children.

   Ten thousand school children, by request through this magazine, were asked to select their choice of a state mammal; the gray squirrel was first choice by a small margin over the cottontail rabbit and whitetail deer. That is the reason the gray squirrel appears on the School Page of the magazine.

3. Fish absorb most of their oxygen through lungs____, gills__X__, skin____.

   Gills serve the same purpose for fish that lungs serve for mammals. Gills absorb oxygen from the water, but the lungs take it from the air. The oxygen used by the fish is not the oxygen atom included in the H_2O molecule of water. The oxygen they breathe is pure oxygen dissolved in the water.

4. Which of the following are migratory game birds: bobwhite quail____, wood duck__X__, ruffed grouse ____, mourning dove__X__?

   The bobwhite quail and ruffed grouse may live and die no farther away than ½ mile from where they are hatched. The wood duck and mourning dove choose to move about over extensive areas during a lifetime.

5. The hummingbird____, bald eagle____, Arctic tern __X__, barn swallow____, travels the greatest migration route of all birds.

   All of these four birds migrate a great distance, but the Arctic tern travels each year about 22,000 miles along its migration route and visits four different continents.

6. Ruffed grouse are native to the coastal plain____, piedmont____, or mountain__X__ region of North Carolina.

   The ruffed grouse has been reported as far east as Person County; but today it is found chiefly in the mountain area of North Carolina west of and including the Blue Ridge Mountains.

7. In 1953, October 1____, November 26__X__, December 1____, was designated as Wildlife Protection Day.

   Thanksgiving Day of each year has been officially designated as Wildlife Protection Day in North Carolina.

8. About 60%____, 75%____, 95%__X__ of our game is produced on agricultural lands. Nearly 80% of the rural area of the state is in farm land. The greatest proportion of game species are associated with agricultural areas which means that at least 95% of our game is cared for and protected by the farmers and landowners of the state.

9. The daily creel limit on black bass in North Carolina is 6____, 8__X__, 10____.

   To implement the Commission's motto, "MORE SPORT FOR MORE PEOPLE—EQUAL OPPORTUNITY FOR ALL," the creel limit is established on game fish to provide an adequate share in a day's fishing trip for sportsmen.

A dog's best friend is a boy.

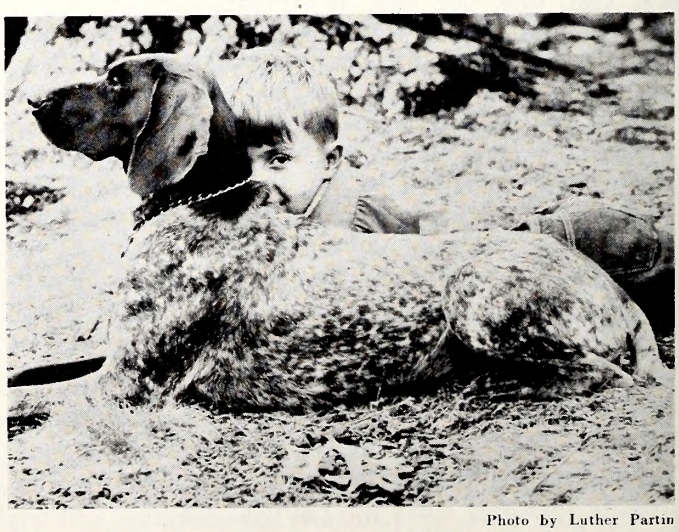


Photo by Luther Partin

A German Shorthair and his youthful pal and owner, photographed while waiting for their brace to be run at the Asheville bird dog field trials held last April.

PROTECTOR OF THE MONTH

J. O. Earley

Mr. J. O. Earley accepted a position as Wildlife Protector in Hertford County on July 1, 1951, after having completed a course of training in law enforcement and wildlife conservation practices at a school conducted by the Institute of Government at the University of North Carolina for the Wildlife Resources Commission.

As one of the many examples which have demonstrated the value of the Commission's pre-service training requirements, Mr. Earley's outstanding record as a conservation enforcement officer resulted in his promotion to Wildlife Patrolman in 1953.

Mr. Earley was born in Bertie County 35 years ago, is married and has two sons, ages 9 and 11.

Enforcement Record for March

The following is a tabulation of the law enforcement activity of the Wildlife Protection Division during the month of March, 1954.

Persons checked	**32,979**
Prosecutions	**449**
Convictions	**411**

A total of $3,109.75 in fines was collected and paid into the school funds of the counties in which the convictions were obtained. Fines were not collected, being either suspended or not levied, in 50.12% of the total number of convictions.

It's the Law!

Question: Does a conservation law enforcement officer have a right to enter upon private property in order to check fishermen for fishing licenses?

Answer: The answer to this question depends on whether the waters concerned are public waters or a private pond. A private pond is defined by law as any body of water "arising within and lying wholly upon the lands of a single owner or a single group of joint owners or tenants in common, and from which fish cannot escape, and into which fish of legal size cannot enter from public waters at any time." All other waters are classified as public waters.

Since fishing license requirements apply to all public waters, a Wildlife Protector has not only the right but the positive duty to investigate persons fishing therein for the purpose of determining whether they have complied with the license law. Any person who interferes with the performance of this duty commits an offense for which he, himself, may be penalized.

The ownership of land consists of a relationship between the individual and specific property which is protected by the laws of the state against outside interference. Being the recipient of this protection, the landowner cannot turn it against the state, itself, or its lawful representatives for the purpose of creating a sanctuary where the state law may be violated with impunity.

RABIES

from page 15

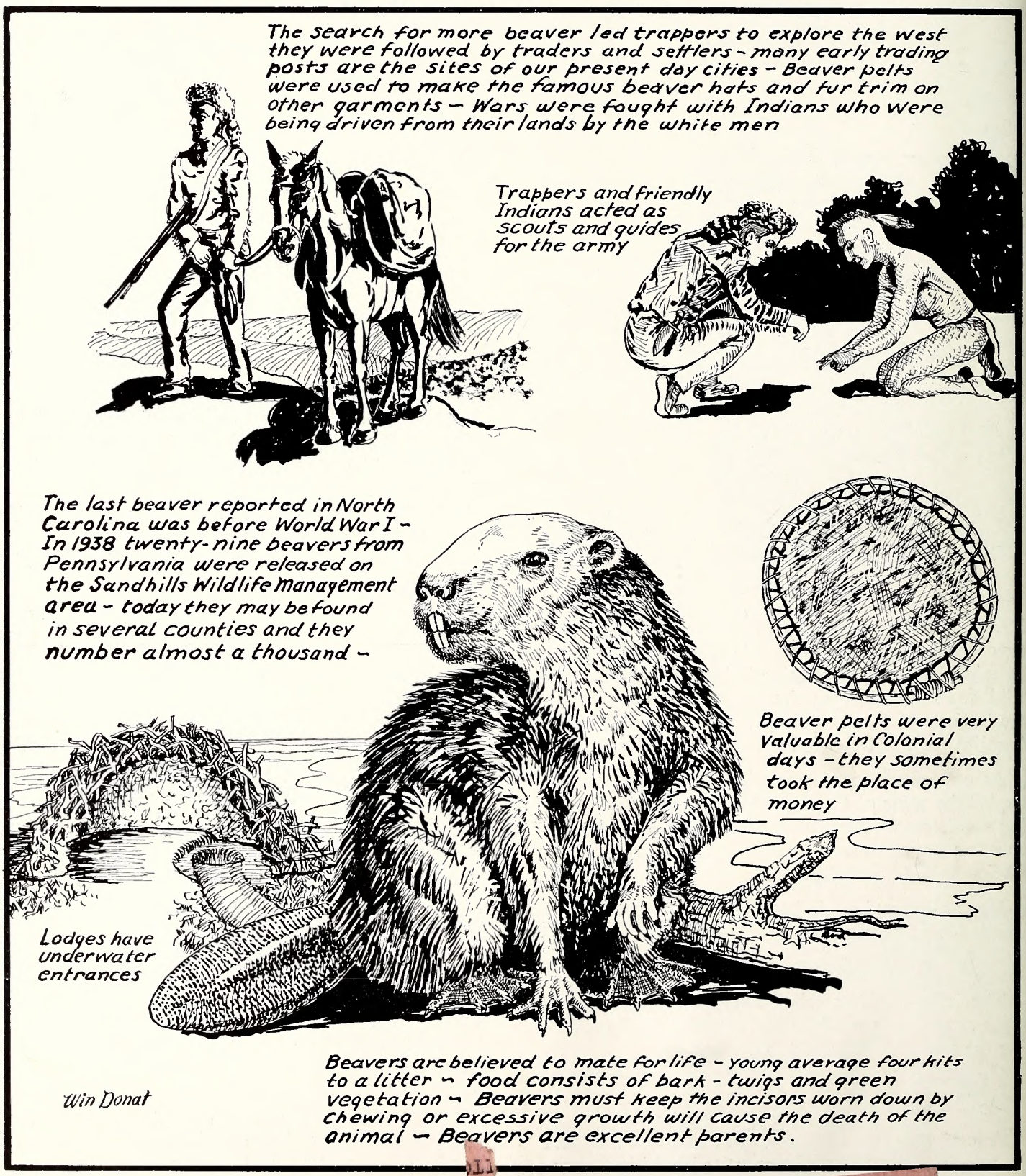
destroying the dogs. The gas kills the dogs instantaneously, and there is absolutely no suffering as with the first whiff they go quietly to sleep without any pain, emotional excitement, or convulsions.

Conclusion

As the program goes into its second year, the citizens of Pitt county have accepted the program and are giving it their fullest endorsement. Stray dogs are kept off the streets, there is less nuisance to humans, automobile drivers, children, and gardens, and it is now a rarity to have a phone call notifying the health department of live stock, sheep and cattle being destroyed by stray dogs. The postmen certainly endorse the program as do all other people who have business reasons requiring them to go to private homes or farm dwellings.

How can a rabies control program, by vaccination of claimed dogs and picking up stray dogs, be of interest to an enthusiast of the conservation of North Carolina Wildlife. We think that the story just told should give the answer; that by apprehending in 1953 nearly 2,000 stray dogs, wildlife such as quail, rabbits, etc., have a much better chance because it is the stray, unwanted, hungry dog that devastates litters of young rabbits, quail nests, young quail, and other wildlife.

NATURE'S ENGINEER


The search for more beaver led trappers to explore the west they were followed by traders and settlers - many early trading posts are the sites of our present day cities - Beaver pelts were used to make the famous beaver hats and fur trim on other garments - Wars were fought with Indians who were being driven from their lands by the white men

Trappers and friendly Indians acted as scouts and guides for the army

The last beaver reported in North Carolina was before World War I - In 1938 twenty-nine beavers from Pennsylvania were released on the Sandhills Wildlife Management area - today they may be found in several counties and they number almost a thousand -

Beaver pelts were very valuable in Colonial days - they sometimes took the place of money

Lodges have underwater entrances

Beavers are believed to mate for life - young average four kits to a litter - food consists of bark - twigs and green vegetation - Beavers must keep the incisors worn down by chewing or excessive growth will cause the death of the animal - Beavers are excellent parents.

Win Donat

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Wildlife
IN NORTH CAROLINA

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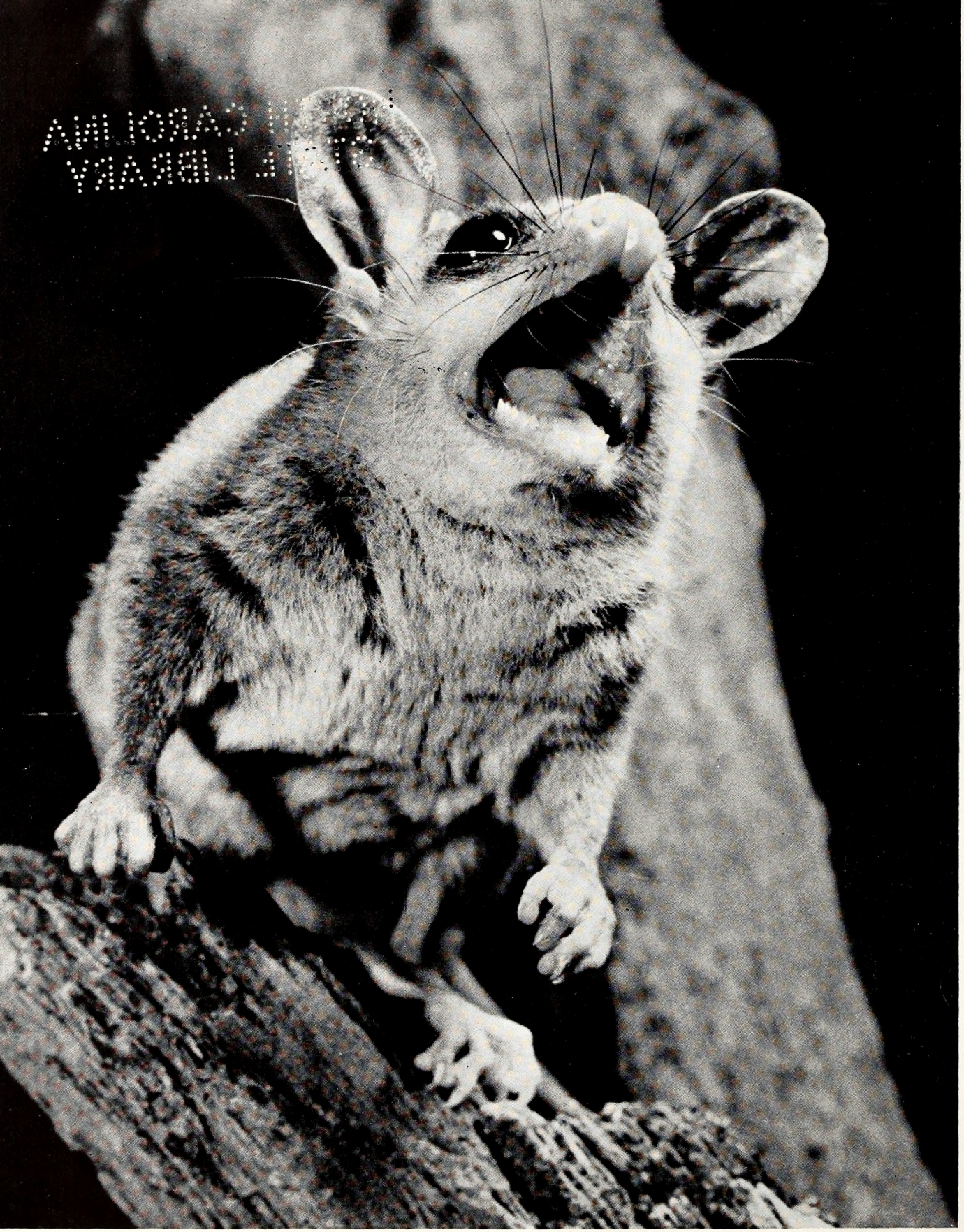

Photo by Jack Dermid

The Traveler

This murine opossum appears to be a vicious little fighter, but actually it is mostly bluff. A native of tropical lands to the south, it arrived in Raleigh last April in a shipment of bananas. For story see page 23.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

WILLIAM B. UMSTEAD
Governor

North Carolina Wildlife Resources Commission

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COVER

A blackberry thicket is more than a place of beauty to the young cottontail. It is a safe place to grow up in, where tangles of briars offer good protection from stray dogs and other predators. Ektachrome by Jack Dermid.

☆ ☆ ☆

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Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

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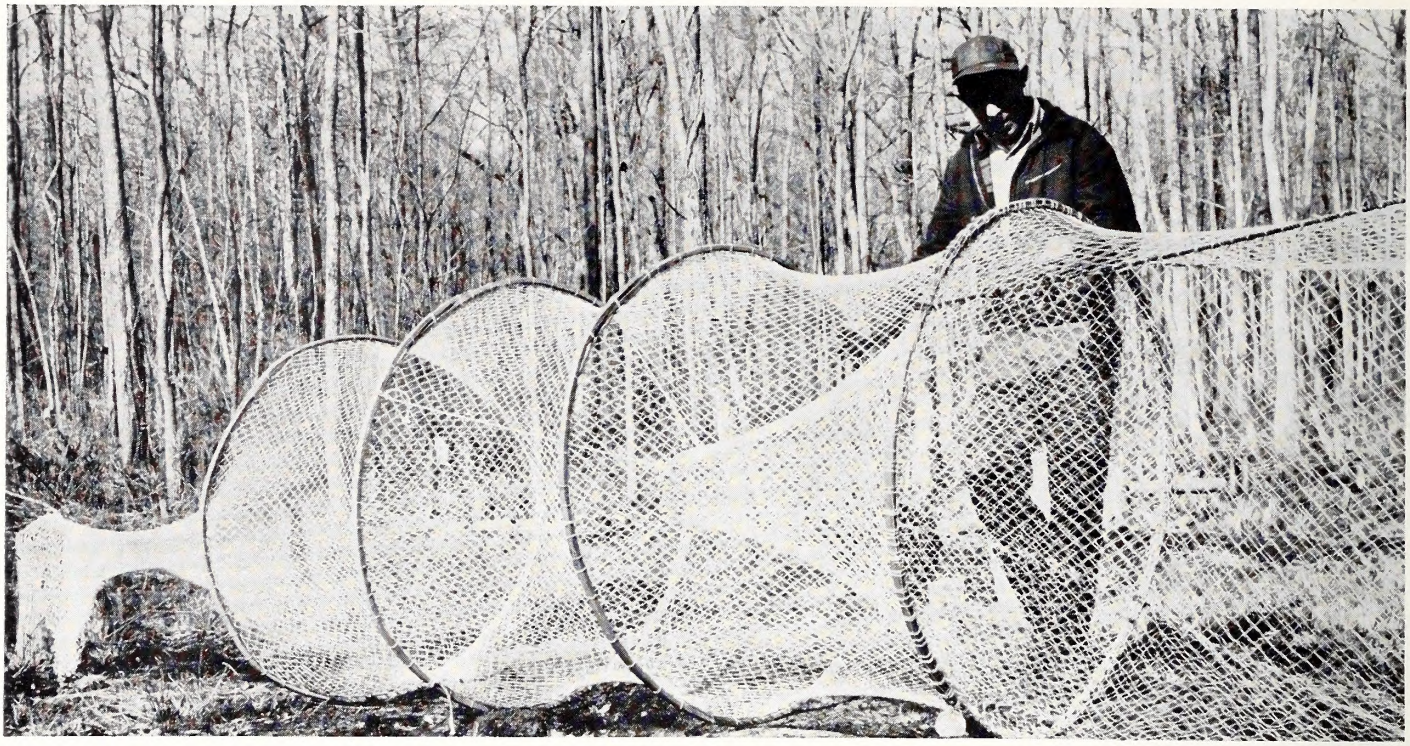


Fyke nets used in the Little River experiment have to be repaired occasionally. Nets, properly used, are the backbone of this rough fish control project.

APPROACH TO A PROBLEM *in Ichthyology*

by Woodrow Price

Reprinted from the News and Observer

Photos by Rod Amundson

The fly rod angler and the net fisherman—pals? These erstwhile shooting foes fishing side by side in jovial cameraderie, the man with the fly rod insisting that the gentleman with the net come up into his part of the stream?

Fantastic! of course it is. The division line between "inland waters," where the man who fishes for sport is king, and "commercial waters," where the man who fishes for a living is undisputed sovereign, now is clear and sharp. Thunderous scowls and bitter words erupt when the netter moves too far upstream.

But, ridiculous as it may sound, the day may come when all this is changed. And it could be not so far in the future.

Some experimental work now taking place on Little River, a relatively small stream a few miles south of here, has entered its concluding stages with indications that the commercial fisherman may not be altogether the villain he has come to appear to the sports fisherman.

May Be Welcome

If the findings continue substantially in the same direction, the net fisherman not only will become a welcome visitor in upstream waters, he could find himself treated on equal terms with the master of the household, within some limits, naturally.

Little River is a 26-mile-long tributary of Albemarle Sound, originating in the Dismal Swamp, flowing past Nixonton and emptying into the sound below Weeksville. In its upper reaches, the river is narrow and deep and its waters are stained a dark brown by cypress juices. As it approaches the sound, the river widens and becomes shallow, and its waters are brackish.

About midway its course, the river is joined by Hall's Creek, which probably is its principal tributary. And here at the mouth of the creek the Wildlife Resources Commission has set up its experimental project. The work going on is as strange to the river folk as the theory it attempts to prove is incomprehensible to the average fisherman.

The Wildlife Commission's rough fish control project at Little River indicates that the commercial fisherman and the sports fisherman may someday fish the same waters—to their mutual benefit.

. . . "they throw back all the good uns and keep the fish I wouldn't give a hoot fer."

One old timer who fishes with rod and reel religiously along the river close by the traps and nets of the Wildlife fellows watched them day after day as they came out in their outboard motorboats and checked the contents of their fishing devices. One night, they heard him telling his friends in a nearby country store:

"Damndest fishing I ever see! They throw back all the good uns and keep the fish I wouldn't give a hoot fer."

Which is exactly what is happening. The Wildlife Commission men have set fyke nets, gill nets, catfish traps and eel pots along a four-mile stretch of the river, two miles upstream from the mouth of Hall's Creek and two miles downstream, all the way to the present dividing line between inland and commercial fishing waters. Whenever they find bass, crappie, bream or other gamefish in their nets, they take them out carefully and return them to the water. But gar, grindle, catfish, eels and carp are kept in the boat.

'Rough' Fish

The idea is to see what effect a controlled program of removing these so-called "rough" fish—meaning, generally, varieties not classified as "game" fish—would have on the population and growth of the fishes favored by the sports fisherman in the waters where game and commercial species intermingle.

To the fish biologist, the rough fish are comparable to weeds in a garden. If permitted to grow unchecked, they will gradually crowd out the more desirable species. This has been shown in similar experiments conducted in other states.

But would the same theory hold good for North Carolina's coastal waters? If so, under what conditions should the net fisherman be invited to move his operations upstream? The Wildlife Commission decided to find out.

Little River became the North Carolina test area for several reasons. For one thing, rough fish were known to abound there. For another, it is similar in many respects to other streams to be found all along the coast.

But the primary reason came from the memories of sports fishermen themselves. They talked of the "good old days" on Little River, the days when bream, crappie and bass were plentiful, the days when they could catch all they wanted in a day of plug casting or worm fishing. They compared the fishing with that of today, when the bass has become infrequent, when bream and crappie do not hit with that old carefree abandon.

Used to be that all of Little River was open to the net fisherman. Strangely, some of the fellows recalled, those were the days when rod and reel fishing was good. Now, the net fisherman has half the river and the sports fishing has declined in the upper portion of the stream.

Underwater Exploring

This looked like the ideal spot to do some underwater exploring. So on November 1, 1951, accompanied by mountains of fishing gear the like of which had not been seen in the upper part of Little River in many a day—and some of which had never been seen there before—representatives of the Wildlife Commission moved in. They came on a Federal aid project—i.e., one financed in part by funds from the Federal government, which in turn raised the money by an excise tax

Boats tied up at Hall's Creek landing.

Photo by Price

Art Dickson records the number and weight of a catch. The number of rough fish coming into the nets has been declining recently.

on fishing tackle. They built a rough shanty on commission-purchased land near Hall's Creek bridge and stuffed it with nets and traps, a couple of bunks and a wood stove. A homemade trailer was parked beside the shanty as the formal "office" for the project.

Microscope, calipers and weighing scales—the latter calibrated in tenths of a pound instead of the customary ounces, to make figuring easier—play just as vital a role in the equipment of these strange fishermen as the fyke nets and eel pots, and the gill nets and carp weir which came later.

It's a three-man proposition. Art W. Dickson is the project leader. Roy E. Sams is his assistant. And George Maston, a commercial fisherman from the Nixonton area, is the third member. As part of his salary, Maston receives the income from rough fish caught in the nets and sold later at the fish houses here.

Some Are Tagged

With their nets and traps, in the two and one-third years from November 1, 1951, through February 28, 1954, they have taken 85,327 game fish from Little River and returned them to the water unharmed after carefully weighing and measuring them and tagging a few. In the same time, they have taken out 35,114 rough fish—and kept them out. The game fish weighed a total of 33,193 pounds. Far less numerically but much heavier on the average, the rough fish weighed 30,668.3 pounds.

Quite understandably, since the work is still incomplete, Dickson discusses findings with some reticence. But, he says, the developments to date, do point toward the ultimate conclusion that removal of some rough fish is beneficial to game varieties.

In recent months, a steady decline has been noted in the number of non-game fish coming into the commission's nets. There has been no significant change in the weight of these fish.

At the same time there has been a slight but perceptible increase in the numbers of game fish caught and a small but significant increase in their weight.

To the biologist, the indications are that, with their enemies reduced by netting and with less competition from rough fish for the available food supply, Little River's bass, crappie and bream are getting both larger and more numerous.

To the man who uses the fly rod, bait rod or spinning rod, or the old cane pole, this is good news. Bass, crappie and bream are his prime targets.

To the man with the net, this also may be good news. It means that, some day, he may be allowed to move upstream to catch not only the rough fish such as grindle, catfish, gar, carp and eel but to get some other species such as the herring and flounder. Strange as it may seem, the flounder, which generally is regarded as a salt water fish, does move into fresh water on occasion.

George Maston and Dickson fishing a fyke net. The fish enter the large end of the funnel-like net, move through a series

'Rough' Fish Sales

Whether the commercial fisherman will want to move his operations toward the head of the stream is another matter, but one vitally connected with the project. The fisherman can sell many of the rough fish. In this area, cats currently bring 25-30 cents a pound, eels 14 cents, carp five cents, flounders 16-32 cents and grindle a penny a pound. But there is absolutely no market for

gars, the ugly long-snouted swordfish of fresh water. And there are indications that with heavy netting the rough fish supply could dwindle so sharply as to make it unprofitable to try to catch them.

Down in Florida, they make ornamental jewelry from the thick scales of the gar and as a result fishermen are encouraged to catch them. Dickson is hopeful that such an industry may crop up here to assure a bounty for fishermen coming in with a few gars. So far, however, no one has expressed an interest in the idea. And Florida still has its East Coast monopoly on gar scale jewelry.

Keeping rough fish under control in all the coastal rivers and creeks where such projects are feasible would be much too expensive for the Wildlife Resources Commission to undertake. Besides, it would be too long drawn out a process for a single organization to accomplish.

Which could mean, as said before, that the commercial fisherman may find himself wooed in considerable degree by the sports fisherman of the near future.

Bear Experimentation

Before linking arms with the netter, however, the

of progressively smaller funnels, and are removed uninjured at the small end.

angler needs some assurance that the other fellow isn't going to catch his bass, crappie and bream at the same time he is taking out all those rough fish. Therefore, the current project on Little River also includes experimentation with various types of gear and sets to determine which are the least harmful to game fish. The various pots and traps keep their catches alive, and so do the fyke nets, which impound fish in a large tunnel

Photo by Price

The numerous nets and other equipment require a lot of attention. Maston is shown stringing a gill net.

with a small opening. Gill nets are killers, but by setting them right they can be kept out of the way of game fish, it has been shown.

The project has had its interesting offshoots.

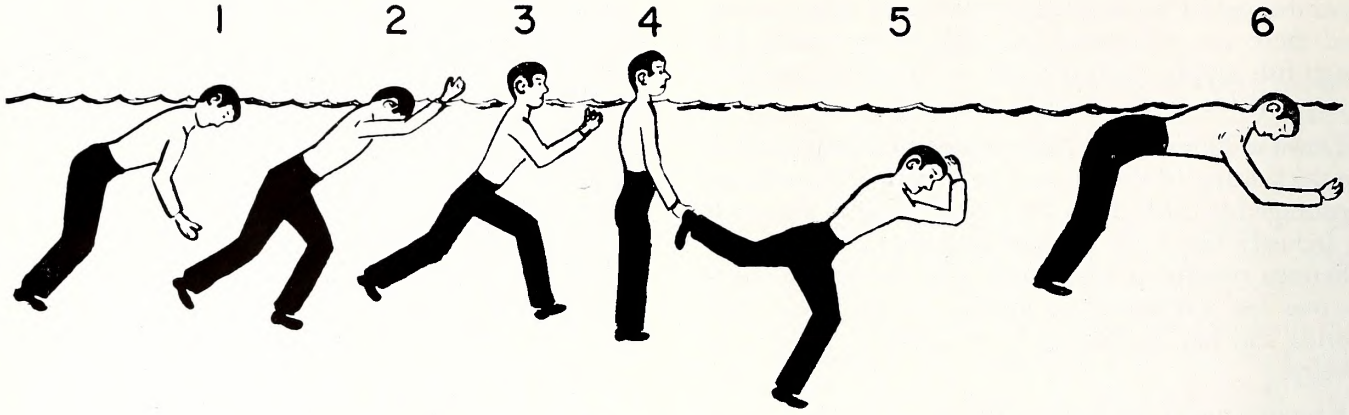
For one thing, it has shown there is considerably more movement of game fishes than had been suspected earlier. Judged by the catches, the population of the various species ebbs and flows month by month. Bass normally seem to stay put more than any other species. Yet, strangely, the champion migrator of them all turned out to be a two-pound bass. He was tagged October 11, 1952, at the mouth of Hall's Creek and on November 1 of the same year was caught in the Perquimans River near Hertford. In 20 days, the bass traveled approximately 30 miles.

Crappie, generally speaking, show greater fluctuations than the other game fishes. Yet one crappie has been caught more frequently than any other fish. Apparently this one fell in love with the fyke nets. Since being tagged, it has been caught five times.

There have been some unusual catches, too. One wall-eye pike, a virtual stranger to coastal waters, was taken the other day. The present pride and joy of the project headquarters is a siren lacertina, otherwise known as a "mud eel," which has two legs and belongs to the salamander family. Blackie, as he has been nicknamed, occupies a fish well of his own on the dock. Croakers, spot, menhaden—all normally found in salt water—wander into the nets occasionally.

To determine when the fish are most plentiful in deep water and when they prefer shallow water, sets

•——————————See Ichthyology Page 9



1. **With lungs full, float face down with back of the neck on the surface.**
2. **Get ready for a downward thrust using arms, legs, or both. Be sure mouth is empty.**
3. **Exhale through nose *while* raising head so that mouth is in the air, shoulders under.**
4. **With head vertical, thrust downward for support during mouth inhale.**
5. **With lungs full, drop head forward, immediately thrust *downward and backward*.**
6. **Relax, with head, arms, and legs dangling, holding all air, while floating forward and upward. Learners rest three seconds here, experts rest ten seconds.**

HOW TO *Drownproof* YOURSELF

by Professor Fred R. Lanoue
Georgia Institute of Technology

Drowning ranks second only to traffic deaths as a single cause of accidental deaths, yet a technique developed at Georgia Tech has proven that nearly anyone can easily be "drownproofed" for extended periods of time, certainly long enough to be rescued under ordinary circumstances.

To give an idea of the effectiveness of the Georgia Tech method, an interesting experiment was conducted at Tech with sixty POOR swimmers. A third of this group had their wrists tied behind their back, another third had legs tied in a half bent position, and the remaining third were free. Average quitting time of these POOR swimmers was four hours and forty minutes, and sixteen of them reached the objective of EIGHT HOURS. It seems as though these folks approach "drownproofing."

"Drownproofing" is fundamentally the development of a technique of breathing while swimming in deep water with such an absolute minimum of energy expenditure that terrifying complications like multiple cramps, heavy clothes, disabling injuries, high waves, rough water, and long immersion have little or no effect on survival. Many of our NON-SWIMMERS who have never swum one length of our pool, have stayed up *one hour* in the crowded deep end of our pool, using this technique, which most of them learned in about a dozen lessons. As a beginner, would you rather have a pretty stroke, or still be on the top an hour after an accident in the water?

Hunters, fishermen, boaters, swimmers, picnickers—anyone who uses the water for recreation or work owe it to themselves, AND THEIR FAMILIES, to learn how to protect themselves in the water. This technique is cheaper and better than any insurance or gadget you can buy, and it is quite easily self taught with a little practice.

The new technique has its basis in physics. Specific gravity of the average human body is about .97, thus, only about five pounds of most individuals will float out of water even with the lungs full of air. Unfortunately, as the head weighs more than five pounds, unless strength is constantly expanded, in the normal swimming head position, the breathing sources, unlike most animals, are located underwater. The problem of people in a potential drowning situation, then, is one of getting enough air to buoy one up, yet to do so in a manner to avoid tiring. This is best accomplished by using the Tech procedure as shown in the accompanying drawing.

Advantages of the Tech procedure are many. First, air provides all buoyancy needed, after putting the face back in the water, thus eliminating many tiring, unnecessary movements. Second, the possibility of choking is minimized by not tipping the head back. Third, real relaxation and long rest periods are obtained by proper spacing of the arm and leg movements. Fourth, the method works nearly as well with arms or legs alone, or using only one of each—folks DO get cramps, disabling injuries, etc., while swimming.

These underwater photos show a Georgia Tech swimmer in positions 4 (left) and 5 as described in the accompanying drawing.

One of the principal reasons for drowning is panic. Panic causes poor swimmers to flail about and waste energy until they sink. It causes them to try to swim too fast, then tire and sink. Distance without speed means literally nothing to a TRAINED swimmer. As long as the swimmer stays underwater, more than out of water, there is practically no strain. The best swimmers at Georgia Tech and at Emory University cannot hold fifteen pound weights out of water using legs alone for more than three minutes, although they can easily stay up for hours and swim miles, with their hands tied behind their backs. How silly it is for poor swimmers, or any swimmers, to try to hold a fifteen pound head out of water for any time. The Georgia Tech procedure makes air do all the work of floatation, minimizes choking, and really produces relaxation. It works equally well on hes or shes—old or young—fat or skinny—tall or short, and smart or dumb.

Of the present 4,000 Georgia Tech students who have taken the required course in swimming, with the technique as the foundation:—

3,800 have swum a mile unclad

3,600 have swum a mile wearing pants and long sleeved shirts

3,200 have treaded water 45 minutes with wrists tied behind backs

2,500 have recovered a body from an eleven ft. depth and towed him 60 yds.

Not a single one has failed to learn to swim before graduation.

Practically identical figures were obtained at Emory University, which has cooperated enthusiastically in the development of this technique.

This article is not intended to influence people away from using life jackets, boat cushions, etc., or from exercising extreme caution while on the water. There will always be people who have to be cared for. This article is aimed at the people who do the carrying. We want to change fear of the water to respect for the water, and we want to remind you that in deep water, a technique in the head is worth a million helping hands —that may be out of reach.

"DROWNPROOF"

YOURSELF

NOW

ICHTHYOLOGY

from page 7

are maintained both shallow and deep the year around. The nets are fished daily, seven days a week, and a careful check is maintained on where each fish is caught. At virtually anytime, therefore, the fellows working on the project could tell an angler whether it would pay him to fish the shallow side or try in deep water.

But few anglers bother to drop by to make such an inquiry, and Roy Sams finds himself continually amazed at the regularity with which the sports fisherman goes to the wrong place.

"We'll be catching fish in shallow water," he says sorrowfully, "and the fishermen we see are out in deep water. Then we start catching them in deep water, and the anglers move inshore, where it's shallow."

Which proves, probably, that the fisherman is just as unpredictable as the fish.

Photo by Jack Dermid

THOSE BAFFLING BASS

by Duane Raver

The leaping, diving, hard-charging battle strategy of the largemouth bass makes him the object of much rod-swishing and lure manipulation. But the complete indifference he sometimes displays toward the fisherman's offerings can try anyone's patience.

The string of stories, ideas, and theories about the largemouth bass, combined with his total unwillingness to conform to any of them, make this critter a super dilemma for the angler. The bigmouth's changeable moods, persnickity tastes, and completely unpredictable nature, are calculated to promote short tempers in the mildest of fishermen. Most of us that have ever chased Mr. Bass already are aware of this, too much aware. The next move is to find the magic key that will unlock the golden door to the secret of catching bass—consistently. You say you have the key? Brother angler, you should turn to lighter reading; you don't need this.

The reckless abandon with which bass sometimes hit any lure or bait thrown their way often causes us to become a little complacent. Almost anyone can catch bass when the fish go on these wonderful biting binges, and many anglers pick up one or two bass on all-day trips throughout the season. But it is our purpose to discuss ways of fooling those baffling batters a little more often, even though we may put 'em back.

Our first job is to know the fish and their habits as exactly as possible. We have pointed out that with bass this may turn into a life's work. We can learn, though, that bass are most active when the water temperature is from 65 degrees to 78 degrees. This temperature may be found in the surface two-feet of water from May 20 to July 1, and at a depth of forty feet during late August and September. Likewise, this temperature may be reached only at night during the hot summer months. It will be helpful to know that bass prefer shallow water near the shore to feed in because they can more easily corner and capture their prey. For the most part, big bass are "lone wolves." For example, a particularly favorable section in a deep hole, behind a tree trunk, or beneath a bunch of lily pads, usually will have only one large fish in charge. On the other hand, medium-sized largemouths may travel in schools of five to twenty fish during the late summer and fall. These bits of knowledge may help in finding bass. Finding them is half the battle.

Bass, like most fish, are most active during the spring. Their food supplies are curtailed because of a lack of small fish, their appetites are good because of a long winter fast, and the water temperature is favorable to maximum activity. The obvious conclusion is that spring is the time to catch the most bass. The catching problem increases steadily with the approach of hot weather. Thus the study of bass habits must cover an entire year if our results are to continue good.

In this regard, two quite important pieces of information will help during summer bass fishing. First, hot weather drives bass into deep water. Fish deep and still deeper for big bass from mid-July on into fall. Secondly, night fishing for bass during the summer may produce some of the best catches of the year. Also, very early morning, just at daylight, is an excellent time for good bass catches.

Methods which have proven successful on largemouth for many years still continue to produce fish, and very few radically new innovations have been introduced in the last 25 years. A few of these old favorite methods include the use of the spinner and pork rind; popping a cup-faced plug or an injured-minnow type lure in the still of early morning or late evening; twitching a wobbling spoon or plug around a weed bed; and so on. When these fail, then it is time to try something drastic.

Natural baits often produce when all the artificials flop. Minnows rigged on a medium-sized hook (a number 4 is large enough) and attached to a long nylon leader of about 6-pound test should stimulate the appetite of Mr. Bass. When this draws a blank, the small, green, meadow frog hooked lightly through the lips and cast gently around the edge of a pond is worth a try. These methods are all old stuff to the experienced bass fisherman, so let's turn to a new trick or two in an attempt to settle the argument with those baffling bass.

Much evidence and personal experience point to the possibility that bass learn and that maybe they even remember. This certainly calls for some new tactics occasionally. One of the best ways to fool bass that have been fished for intensely is to offer them small lures. This list of the smaller baits is headed by a bluegill-sized wet fly with a fuzzy body and a caterpillar-like appearance. The common name of this innocent-looking but deadly fly is the Wooly Worm. A simple bit of fluff, it really nails down the self-confident bass in the average farm pond or dark-water lake. Colors that have proven best are the black body with brown hackle, yellow body with brown hackle, and dark green body with yellow hackle. Size 10 isn't too small for big bass, although you may want to try 6's or 8's. You may be surprised at the large bluegills this lure collects during the season, too.

Staying with the fly rod, the tried and true streamer fly proves the undoing of plenty of bragging-sized bass every season. The one variation that may be classified as news is the maribou-type streamer. This fly uses the soft, fluffy plumes of maribou feathers for the streamers and creates an action that no other material can duplicate. It has the appearance of ultra-limp pork rind and is deadly at times. Try the maribou in pure white with a tinsel body and without a spinner. Size 2 is plenty large and 4's aren't too small. Fish the streamer in short, quick jerks around weed beds and brush. If you can spot a feeding bass, use a long line and lay the streamer a few feet beyond him and retrieve rapidly.

Sketch by Duane Raver

An innocent-looking wooly worm, enlarged to show detail. This lure is suitable for large bluegills as well as bass.

Around five o'clock in the afternoon, switch to a small bass popping bug tied on a number 4 hook. The fewer the feathers attached to the cork or plastic body, the better it will float. Cast the red and white or frog-colored bug toward the shoreline from a quietly paddled boat. Patience is the secret here, because the longer you allow the bug to rest before twitching it, the better your chances for a strike. Make it squirm rather than pop across the surface. Stop, then go. Slowly though; Mr. Largemouth is eyeing it critically. To help him decide it's good to eat, use a nylon leader from 6 to 9 feet, long tapered from 10-pound test to 4- or 5-pound test. And make sure the leader sinks. A little mechanics' hand-cleaner rubbed on the leader will help it go down.

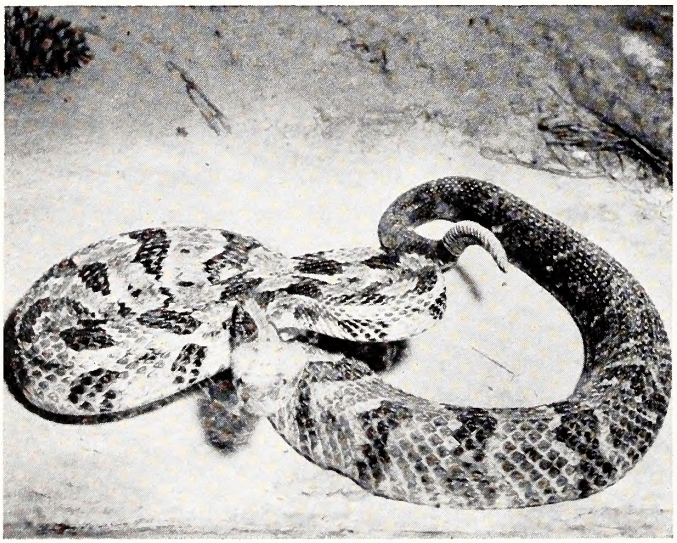
Still no bass? Maybe it just wasn't your day. Or maybe one little fact was overlooked. Did you wear a white shirt, or a light-colored hat? This is worse than banging on the boat. Next time, try dark clothing. Did you retrieve too rapidly in weedy water? It takes time for Mr. Bass to react to seeing your lure and the vegetation may have slowed him considerably. Maybe you overlooked one or two places in the section you fished, and didn't cast there. Covering the water thoroughly is often the answer to success.

The capybara of South America is the largest rodent in the world. Next rodent in size is the beaver.

The bald eagle was adopted as our national emblem by act of Congress on June 29, 1782.

Swimming is a sport enjoyed by young and old alike. Those who enjoy it most have learned to swim well and know and obey the rules of safe water conduct.

North Carolina has four poisonous snakes. The rattlers identify this one as a rattlesnake. Learn to recognize poisonous snakes and carry a snakebite kit on hikes through snake-infested woods.



VACATI

by

Water photos made with aid of Alpl

When the good ol' summer time rolls arounc
fishing, swimming, boating, or just outdoors in
time, his over-abundant energy sometimes mak
giving the care-free vacationer a few hints ab
get until they are face to face with a difficult

The words of Benjamin Franklin still have va
perience keeps a dear school, but fools will l
give advice, but we cannot give conduct. Rem
ed. If you do not hear reason, she will rap you c

A well executed dive, but an invitation to sudden disaster if the water is shallow or hides a stump, sunken boat, or some other solid object.

Cars, airplanes, trains, human beings, and boats have a loading capacity. This boat is overloaded to the point of sinking, in fact it did sink just after this picture was shot.

Fishing, North Carolina's favorite outdoor sport, is more rewarding to the fisherman and less hazardous to himself and his companions when he knows how to handle his tackle properly.

SAFETY

rtin

ational Honorary Boy Scout Fraternity

r Heels can be found spending their spare time When the human being relaxes to have a good ceptible to danger. These pages are devoted to on vacation hazards that many are prone to for-

as illustrated by the following quotation: "Ex- other, and scarcely in that; for it is true, we may : They that will not be counseled cannot be help- uckles."

Camera close-up of a woods tick on a human arm. Ticks are known to carry disease and their bite may cause infection. Use a tick and chigger repellant and have someone check you for these parasites after a hike.

A canoe is a very delicately balanced craft, so made to furnish smooth, gliding transportation with a minimum of effort. But anyone will tell you that you should never, never stand up in a canoe, for this . . .

. . . is usually what follows. Hey! what happened to the other fellow.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Wildlife Commission Sets Hunting Rules

The N. C. Wildlife Resources Commission met in Raleigh June 14 to set the official rules for the 1954-1955 hunting seasons. There were only a few minor changes made over last year's regulations. The regulations will be printed as quickly as possible for distribution by wildlife protectors to license dealers before August 1 when they become effective.

* * * *

Time to Renew Combination Hunting-Fishing Licenses

Tar Heel anglers who are now fishing with combination hunting-fishing licenses are reminded that current licenses expire July 31. New licenses will be on sale August 1. State fishing licenses expire with the calendar year.

* * * *

Health Department Issues Parrot Fever Bulletin

The Veterinary Public Health Section of the N. C. State Board of Health has issued a four-page bulletin of interest to parrot and parakeet owners. The bulletin describes Psittacosis (parrot and parakeet fever), a virus disease among parrot-like birds which can be transmitted directly to humans. Although incidence of the disease is not high, there is a danger present in view of the increasing popularity of parakeets as household pets. The bulletin may be had free of charge from the Health Department.

* * * *

Eighteen Copies of New Fishing Film Available

The Wildlife Resources Commission has purchased 18 copies of its new production BETTER FISHING, a 29-minute sound-color film on warm water fish management and fishing. A copy will be placed in each of the nine commission districts, and the remainder booked out of the Raleigh office. The film was produced for a cash outlay of less than $3,000.00, not counting salaries and travel expenses involved in the production, a saving of nearly $15,000.00 over estimated cost of having the film produced commercially.

* * * *

Fishing Access Area Program Expanded

Action was taken by the Wildlife Resources Commission at its June 14 meeting to provide for the extension of benefits to North Carolina fishermen through its program for acquisition and development of fishing access areas during the next fiscal year. For this purpose, a total of $67,000.00 has been recommended by the commission for approval. This work will make the public waters more readily accessible by boat for use by North Carolina anglers.

The Flat Rock BIRD SANCTUARY

by Luther Partin

Education Representative

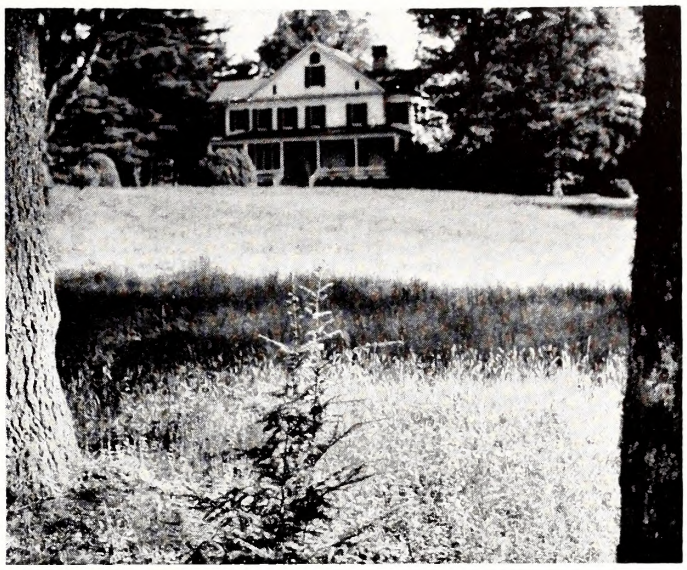
Near the town of Hendersonville, in the mountains of western North Carolina, lies the village of Flat Rock, established in 1790 and named for a large flat rock found near the center of the settlement. Flat Rock is rich in history, beautiful wooded hills and valleys, and ante-bellum architecture showing the influence of English, French, and German owners in years past.

The original settlers in Flat Rock were rice planters from the river lowlands of South Carolina, Georgia, and Louisiana, seeking respite from the heat and humidity of the rice-growing areas. The wonderful climate and scenic splendor attracted people of great wealth and many of royal descent. Tremendous estates were established, containing thousands of acres and magnificent homes that were the equal of any in the country at that time.

Among the earliest settlers were Charles and Susan Baring, of England, and Judge Mitchell King, noted jurist and president of Charleston College. These families established homes in the early 1800's and were soon followed by members of the Charleston, Atlanta, and New Orleans society, and European nobility.

Only recently, Flat Rock has been declared a bird sanctuary, containing around 5,000 acres of streams, lakes, farmland, and woodland in its hills and valleys. It is a somewhat unique sanctuary, in that Flat Rock is not a municipality, and all of the land included in the sanctuary is privately owned. The boundaries of the sanctuary encompass many of the old estates, most of which are still intact, and one is still in the hands of a descendent of the original family. All the other estates have passed into new hands since the Civil War. At present, various notable people own some of the old estates within the limits of the sanctuary, including Senator Maybank of S. C., and Carl Sandburg, author and poet.

Flat Rock became a bird sanctuary largely through the efforts of Mr. R. I'On Lowndes, who has been a resident of the village since boyhood. Mr. Lowndes has been a naturalist and a conservationist for well over a half century. He has spent much of his life in the study and conservation of wildlife, traveling widely in the U. S. and Canada to study the habits of wildlife and to observe the conservation measures employed to conserve wildlife. Through his extensive work, study, and observation, he conceived the idea of a national organization devoted to the conservation of Wildlife in the U. S.



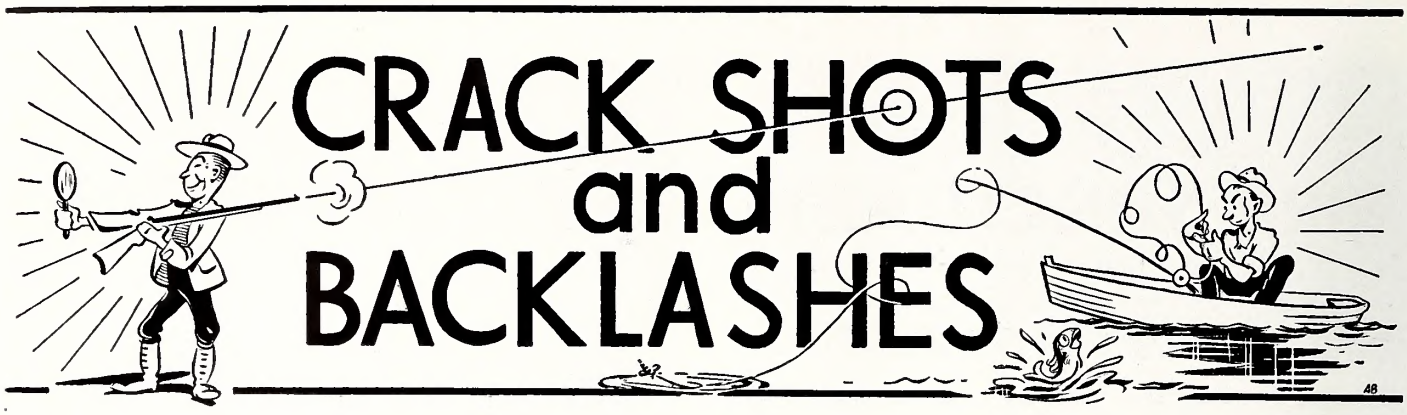
The sanctuary encompasses many large estates such as the one above. The grounds, fields, and wooded areas receive careful attention, making ideal habitat for birds.

Finally, in 1928, in consummation of his many years of expense and work, Mr. Lowndes succeeded in founding the Southern Game Protective Association of America, with headquarters in Asheville, N. C. A non-stock corporation was formed to "acquire and maintain on a permanent basis sufficient and suitable habitat for game and fish, so as to ensure the continuance and perpetuation of opportunity for hunting, fishing and outdoor life for the benefit of the present and future generations . . ." The first convention was scheduled to be held in Asheville in 1929 for the purpose of adopting by-laws, electing officers, and making plans for the furtherance of the Association.

In the same year of 1928, Mr. Lowndes became ill and only after numerous operations and many years of convalescence was he able to again apply his enthusiasm to wildlife conservation. His dream of a national conservation organization in the meantime had failed to materialize. In the absence of the guiding hand of its founder, the Association never became a reality.

After his recovery, Mr. Lowndes gave consideration to his health and age and turned his attention to the creation of a small scale model of his desired nation-wide organization. He envisioned the entire area of Flat Rock, with its magnificent estates maintained in excellent condition throughout the year, as a haven of food and protection for birds. Since Flat Rock is not a municipality, the county government provides civil regulation. He discussed his idea with the other inhabitants of Flat Rock and secured a petition bearing the names of 55 landowners, which he presented to the county authorities. In November, 1953, the Flat Rock Bird Sanctuary Association was established by authority of a resolution adopted by the Henderson County Board of Commissioners, and Mr. Lowndes was appointed custodian.

•——————See SANCTUARY Page 18



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Some months ago joint action taken by the Virginia and north Carolina wildlife commissions to ban Baltimore minnows (cull goldfish) as bait in Kerr Reservoir.This arounsed considerable comment among commercial goldfish producers who sell uncolored goldfish profitably for bait.

The June issue of WILDLIFE printed an article by Charles Cadieux of North Dakota describing the effects goldfish can have when they take over a body of water. The article was made available by courtesy of OUTDOOR LIFE. After reading Cadieux's article in OUTDOOR LIFE, Alan M. Fletcher, Philadelphia, associate editor of THE AQUARIUM, sat down and wrote this letter to OUTDOOR LIFE editors. Because of Fletcher's position in relation to goldfish fanciers, we offer his letter, again through OUTDOOR LIFE's courtesy:

"Charles L. Cadieux's article The Golden Horde is, in our opinion, the most graphic statement of the goldfish problem ever printed. As the principal advisers to the aquarium industry and hobby, we have long campaigned against the release of aquarium fish, and goldfish in particular.

"The danger potential of goldfish can be realized when you consider that a single supplier to the aquarium industry in the Midwest raises about 30 million each year. And a single mature female goldfish will spawn about 5,000 eggs. You may put us on record as condemning the use of goldfish as bait.—"

J. W. Whiteside, Charlotte agriculture teacher reports on the work done by his FFA boys; the picture shows what can be done through cooperation of groups of this size:

"Dear Sir:

I am enclosing a picture of Sericea lespedeza, bicolor lespedeza, and Multiflora rose, taken on the Berryhill School ground in Mecklenburg County. These plots are two years old and were set or planted by our FFA boys. Each of these boys on the photographs have planted wildlife plots at their homes. We had around a dozen boys who put out wildlife plots this year and about that number last spring. Our FFA classes put out an additional plot of sericea and bicolor lespedeza on the school ground this spring. One of our boys, Jimmy Vandiver, won first place in the Mecklenburg County FFA Public Speaking contest last year and used as his topic 'The Propagation of Wildlife in North Carolina!' "

Field men of the Wildlife Resources Commission frequently run across stories that are of tremendous interest to wildlifers, professional and amateur. We hope that this note from Ray Smith, Morganton, Biologist of District 8 will stimulate more stories of the same kind:

"I am sending this observation to you for what ever it is worth. Last Monday, May 10, I was traveling to Yancey County on highway 26, when I saw four objects in the road I took to be quail, about 150 yards from the separation of 26-A from 26. As the truck slowed down I saw they were woodcock. The day was bright and clear, cool with a light breeze, and the time was 11:06. When I first saw them they were in a circle, but as the truck neared them and stopped they formed a neat and orderly line, moving off the road, from right to left. The birds were spaced evenly, about 18 inches apart.

As they started off the road they rocked back and forth on their lateral axis. While this rocking was taking place they were also bobbing their heads. About every second rock, as I remember it, they took a step, lifting each foot and putting it down as if they were seen in slow motion.

A two year old plot of sericea planted on the grounds of the Berryhill High School in Mecklenburg County, by the FFA chapter. Left to right: J. W. Whitesides, teacher of agriculture. Jimmy McGee and Marion Ford, FFA members.

Private and rental boats at the Tar Heel Marina, near Henderson, N. C., on Kerr Reservoir. The lake covers some 48,900 acres and provides fishing, boating, and swimming for ever increasing numbers of people.

They did not seem afraid of the truck and did not display any fear until I got out of the truck to 'shoo' them off the road, out of the way of an oncoming car. They flew ten yards or so, and landed in a grain field on the left side of the road. Then I left."

Bobwhite quail are worth money to farmers, and here is proof of that statement in a letter to Project Leader Bob Hazel:

Dear Mr. Hazel:

I am answering your letter of April 7, with pleasure. I set out plants and planted the seeds. For several years I have been feeding birds and trying to protect them, and I found out it paid well. Not thinking much about it I just liked to see the birds. I find they stay around where they are fed. At my home I put out things they like to eat, they build and raise. I truly believe they keep the boll weavels off my cotton. I don't dust or spray my cotton and make a bale to the acre. I am satisfied with that because I don't live far from the mountains. I do not think cotton grows as good here, as it does farther down the country. If people knew how much birds were worth on the farm they would take better care of them. I think it is wise to set out plants and plant seeds around the edges of fields and in open places in the woodland. People near here spray and dust cotton, then don't make as much as I do to the acre. I have cotton planted and I am going to leave the boll weavel killing with the birds. I will let you know this fall how I make out.

Yours truly,
Winnie Wilson
Union Mills, N. C.

Crows have more than a few friends, who occasionally rise to their defense:

Dear Sir:

I read with considerable interest your article on the Eastern Crow. In addition to those you listed as being natives of Eastern Carolina, we have another species commonly known as the Jack Daw. This bird is all that you say about the crow. His favorite occupation seems to be robbing birds' nests.

With respect to the ordinary crow, I believe that he is much more of a friend to the farmer than an enemy. In fact, I believe this so strongly that I do not permit crows to be shot on property under my control.

With kindest regards, I remain

Yours very truly,
J. L. Phillips
Kinston, N. C.

The jack daw referred to by Mr. Phillips is probably a grackle. Webster's Collegiate Dictionary, an amazingly good source of wildlife information, defines the jack daw: "A common glossy black crowlike bird (Corvus monedula) of Europe, similar to the American grackles." More commonly called blackbirds, grackles are not protected by state law.

Letters of praise are always welcome by editors, who like most folks, have a certain amount of ego. When the same type of letter contains valuable information or suggestions it gets into print presto.

"Dear Sirs:

I have read with interest the two articles in the April and May issues of WILDLIFE IN NORTH CAROLINA pertaining to the bluebirds and tobacco barns, and what the 4-H Club has done to help prevent the destruction of these beautiful and beneficial birds. However, if it appears more publicity is needed to get the word to all farmers in the tobacco areas, would it be practical to mail circulars giving pertinent information to all box-holders in the rural areas? Or, distribute flyers through the Auto License Bureaus in the fall when the auto licenses are purchased?

"Perhaps sometime you would like to announce in WILDLIFE OF NORTH CAROLINA the following bulletins about birds that are available for 10c each from U. S. Printing Office, Washington 25, D. C.

Attracting Birds
Some Common Birds Useful to the Farmer
Homes for Birds

"The last bulletin contains instructions and directions for building houses for 27 species of birds, which includes nest brackets and shelves for robins and phoebes, as well as the all important roosting shelters that serve as a much needed protection during severe weather.

"Can you tell me if there is any place in North Caroline where I can purchase 2 x 2 color photo slides of birds? Your magazine carries many pictures of birds and I thought it might be possible you could refer me to a photographer that has his own individual slides for sale.

"I appreciate and enjoy the NORTH CAROLINA WILDLIFE Magazine, and think it's a real bargain, and a real service,—and all for 50 cents per year!

Sincerely yours,
Mrs. Woodson Dickerson"

Editor's Note: WILDLIFE magazine is deeply grateful to the people who contribute to this section each month. If "Crackshots and Backlashes" makes interesting reading it is because of our readers' readability!

SANCTUARY

from page 15

At the Association's first meeting, in March, 1954, the constitution and by-laws were unanimously adopted, officers were elected, and plans made for the development of the sanctuary. The 5,000 acres of the sanctuary are well-watered and heavily wooded. The Association has erected signs on all highways entering the sanctuary. Further development calls for the erection of shelters and establishment of plants such as multiflora rose and bicolor lespedeza that will furnish food and cover during the winter months. Game birds, already protected by state laws, and birds known to be destructive to crops are not included in the sanctuary program.

Many birds have a poor sense of smell. The buzzard depends almost entirely on sight to locate his special diet and the horned owl's favorite dinner is skunk.

* * * *

The male hardhead catfish carries the eggs in his mouth until the little fish are hatched. Then continues to carry the little fish until they have reached a length of about three inches.

Floyd Williamson, Engineering Division chief, and Bob Hazel check progress on the new nursery building.

Williamson, aiming level, and Don Hankla, District Biologist, locate drainage ditches in nursery.

Bob Hazel examines multiflora rose seedlings germinating under the burlap mulch.

Developing and testing new plants is an important function of the new nursery. This is a seed block of VA-70 shrub lespedeza, an improved strain of bicolor lespedeza particularly suited to the cooler climates of western N. C.

A New Nursery For The Game Restoration Program

by Bob Hazel, Project Leader

Photos by Jack Dermid

North Carolina sportsmen are getting a new wildlife conservation nursery. Bulldozers, carpenters, trucks, and tractors are at work setting up buildings, grading roads and drainage ditches, and planting crops in what promises to be one of the best projects of its kind anywhere in the United States. By early next year the nursery will be producing bicolor lespedeza and multiflora rose seedlings at full capacity.

The nursery is located near Chapel Hill on property leased from the University of North Carolina. Until a few years ago it was the site of a nursery operated by the U. S. Soil Conservation Service. It includes 185 acres of some of the most fertile land to be found anywhere in North Carolina.

The new nursery will replace the one which has been operated for several years by the Commission on the Sandhills Wildlife Management Area near Hoffman. Its central location, more fertile soil, and available water for irrigation make it a preferred location. Because of these factors, the Commission will be able to produce far larger quantities of game food and cover materials and a larger variety of materials than was previously possible.

The operation of the nursery has a two-fold purpose, one of these is to produce game food and cover planting stock for use by the Commission's various game restoration projects. This will include the yearly production of several millions of shrub lespedeza and multiflora rose seedlings, as well as several thousand pounds of annual seeds for distribution to farm game cooperators throughout the state. Various kinds of seedlings and grass seeds for use on wildlife management areas operated by the Commission will also be produced.

The second purpose, and a very important one, is the development and testing of new varieties of plants which will also be useful in wildlife habitat restoration. This involves the selection, culture, and study of wildlife values of a great variety of plants, some of which come from the far corners of the world. This phase of the program is undertaken in cooperation with the Soil Conservation Service, whose plant specialists will assist in the observational work. Since food and cover development is basic for the management of most wildlife species, this work will be the basis of a large part of the Game Division program.

The new nursery is an example of what can be accomplished by cooperation between various Federal and State agencies and institutions. It is certain that the sportsmen of North Carolina will benefit greatly as a result of this project.

PROTECTOR OF THE MONTH

Robin Rhyne

Mr. Robin Rhyne was born in Burke County in 1911 and, having lived there most of his life, has an exceptional knowledge of the territory as well as the friendship and respect of a great many people in the area.

Returning to civilian life after two and one-half years in the Pacific Theater during World War II, Mr. Rhyne was employed as an enforcement officer by the North Carolina Wildlife Resources Commission on March 1, 1950.

While enforcement in Burke County is a job of considerable magnitude, that county including parts of two wildlife management areas and two large inland reservoirs, Mr. Rhyne finds it possible to cooperate with the Protectors in the surrounding counties in enforcement activities.

Enforcement Division Record for April

The following is a tabulation of the law enforcement activity of the Wildlife Protection Division during the month of April, 1954.

Persons checked	59,986
Prosecutions	909
Convictions	850

A total of $5,323.70 in fines was collected and paid into the school funds of the counties in which the convictions were obtained. In 44.82% of the total number of convictions, fines were not collected, but either suspended or not levied.

It's the Law!

Question: Is it lawful to fish on Sunday?

Answer: That depends partly on the locality and partly on the type of fishing involved. An ancient statute, first enacted by the Colonial Assembly in 1741, provided that anyone who should, "on the Lord's Day, commonly called Sunday . . . employ himself in hunting, fishing or fowling . . . being of the age of fourteen years and upwards, shall forfeit and pay one dollar." This statute remained on the books for over 200 years until it was finally repealed by the legislature in 1951.

We cannot find any statute which now prohibits fishing with a hook and line on Sunday. There is a statute, however, which imposes a serious penalty—a minimum fine of $200.00 and a maximum of $500.00 or twelve months imprisonment—for fishing with nets on Sunday. This is Section 247 of Chapter 113 of the General Statutes of North Carolina.

Specifically, the Section referred to is located in Chapter 113 as a part of Article 21 which is entitled "Commercial Fin Fishing; General Regulations." For this reason, it might formerly have been supposed that it was intended to prevent only such Sunday netting as may be done on a commercial basis in the way of a remunerative occupation. But whatever might have been the original purpose of the statute when it was first enacted in 1883, all doubt was removed as to its present meaning by the 1951 legislature which amended the statute by providing that it should apply "only to inland waters under the jurisdiction of the Wildlife Resources Commission, and shall not apply to any waters classified as commercial fishing waters."

Thus, as the law now stands, it is (1) lawful to fish on Sunday with a hook and line in any waters of the State; (2) lawful to fish with nets in commercial fishing waters on Sunday; but (3) unlawful to fish with nets in inland waters on Sunday.

Of course, it is unlawful to fish with nets in inland waters at any time, except with a special license to take non-game fish from certain designated waters as a means of improving game fish habitat. But so long as the Sunday netting statute remains on the books, the officers of the Wildlife Resources Commission have no alternative but to enforce it even as against netting operations, so licensed.

While we cannot recall any case in which a court has actually imposed the minimum penalty the statute calls for, it is necessarily the prerogative of the legislature to determine whether this law serves a worthwhile purpose.

Dear Joe

Joe is not one individual. He is a sort of composite of all the sportsmen of North Carolina. Joe goes hunting and fishing as much as time will permit, and questions frequently arise in his mind about the wildlife on his favorite stamping grounds. Sometimes he cannot answer these questions himself; so he writes the Wildlife Resources Commission. These letters are our answers to Joe.

Joe Doaks

Wildlife Resources Commission
Raleigh, N. C.

Gentlemen:

Please answer the enclosed questions on fish ponds.

Very Truly Yours,

Joe Doaks

Dear Joe:

Thousands of people have yielded to the desire for a private fish pond in the back yard. About the time the prospective builder lets the desire get to the talking stage, he begins to receive a bewildering mixture of neighborly advice. All of it is sincere, much of it is contradictory, and some of it is good.

Unfortunately, no two ponds are exactly alike. Lacking a careful investigation of each pond, the answers to questions must be on the basis of general principles rather than specific details. We receive hundreds of questions each year concerning the construction, stocking, and management of farm ponds. Here are the answers to yours.

Where can I get help in building a fish pond?

Help may be had for the asking from either the Soil Conservation Service or the Agriculture Extension Service. Your local County Agent or Soil Conservation Service representative will give you engineering assistance in constructing the dam and advice on stocking and management. They cannot provide financial assistance.

How much will it cost to build a pond?

Average farm pond costs for the whole country run about $1,000 per acre of impounded water. Your cost will be more or less, depending on the length of the dam required. Try to select a site where the shortest dam will impound the most water.

Do I need any kind of a permit to build a pond?

In most states, you need a permit from the Health Department. Ask your local health officer.

What soil type is best for a pond?

Clay, silty clay, or clay loam are the best soil types. There must be enough clay in the soil to seal the pond basin. Ponds should not be built in sand, gravel, or shale soils. Ponds in limestone soils sometimes develop sudden leaks which may completely drain a pond. Soil samples should be taken before the site is finally selected.

What is the best size for a fish pond?

The best size is the size determined by the watershed. You should have from ten to thirty acres of watershed for each pond acre, depending on whether the watershed is cultivated, pasture, or woodland. Usually water can be added by terraces or excluded by diversion ditches. Normal rainfall on a watershed of this size will keep the pond supplied.

How much watershed do I need if I have a good bold spring to supply the pond?

None. Under those circumstances, every acre of watershed is a liability because it increases the danger of flood damage.

How wide should the flood spillway be?

That depends on the area of the pond and the size of the watershed. Remember that all flood water falling on the watershed must pass through the spillway. Ten acre-feet of flood water will raise a 10-acre pond one foot, or will raise a 1-acre pond 10 feet. Based on the heaviest rain of record in your vicinity, figure the size spillway you will need and then make your spillway *too big.* And remember, the flood spillway must be cut into solid soil at the end of the dam. It should never be built across the fill unless it is lined with concrete to prevent cutting. A good spillway is the best dam insurance you can get.

What slope should the dam have?

To prevent erosion and sloughing off, the side facing the water should have a 3 to 1 slope. That is, for a dam 10 feet high the fill should start 30 feet out in the pond basin. In the very best clay soils, this slope may be reduced to 2 to 1, but never less. A 2 to 1 slope is satisfactory for the back of the dam where there will be no wave action against it.

Is a drain pipe needed?

By all means! It need be nothing more complicated than a horizontal pipe entirely through the base of the dam at its lowest point, an elbow on the inside end, and a vertical pipe from the elbow up to the desired water level. It needs to be large enough to carry the normal flow of the water supply. The pond can be drained, if necessary, by turning the pipe at the elbow and dropping the vertical part sideways to the pond bottom.

Where can I get fish to stock the pond?

You can get fingerling bass and sunfish from the U. S. Fish and Wildlife Service without cost. Application forms for the purpose can be obtained from your local Soil Conservation Service representative, or County Agent. If they do not have them, write to the Wildlife Resources Commission for advice.

How many fish will they give me for my pond?

If your pond is to be fertilized, the U. S. Fish and Wildlife Service will give you 1,000 bream fingerlings per surface acre in the late summer after your pond is completed. They will give you 100 bass fingerlings per surface acre the next spring. If the pond is not fertilized, they will give you half this number of each species.

Instead of waiting for those fish, would it be all right to get some from the local creek?

Not if you want good fishing. Even if you succeeded in getting some bass and bream, you would likely have an additional collection of various undesirable species such as carp, suckers, catfish, and the like. These fish would use up a part of the available food supply in the pond, and might very well eat the eggs of the game fish you want.

Why should I have just bass and bream?

The idea of the bass-bream combination is that the bream eat the aquatic insects which grow in the water, and the bass eat the little bream. Unless the bass eat most of the bream, there will not be enough food in the pond for the ones that are left to grow up.

Couldn't I have better fishing by putting in more fish?

Not at all. Your pond is just like a pasture, and the number of fish that can grow up in it depends on the available food supply. Fish are unlike cattle, however, in that they can stop growing at any time in their lives when the food supply is limited. Too many fish in your pond will produce a stunted population, and will not provide good fishing.

Is it necessary to fertilize my fish pond?

Whether you should fertilize or not depends on what you want in the way of production. If a large pond is to supply fish for only a few fishermen, the natural food supply in the pond will be adequate. Fertilizing the pond will provide more natural food, and the pond will be able to carry more pounds of fish. This is exactly the same principle as fertilizing a pasture so that it can carry a greater number of cattle.

Should I try to keep the weeds out of my pond?

You should not have rooted vegetation, especially in a fertilized pond. Weeds provide for the escapement of too many small fish and also make fishing difficult. One benefit of an adequate fertilization program is that the fertilizer makes the water green and prevents sunlight from reaching the bottom of the pond. This helps to prevent the growth of rooted plants.

When can I start fishing in my pond?

Just as soon as both species have spawned the first time. After the original stock of fish has grown up and spawned once, they should be caught so there will be more food left for the small fish to use.

Is it a good idea to catch just the bass and leave the bream to supply more bass food?

It is necessary to remove many more bream than bass. One of the greatest problems in our fish ponds today is the development of excessive bream populations which become stunted for lack of food and do not grow up to a useable size. When this occurs, these hungry fish successfully raid the bass nests, and fishing in the pond is ruined. Take out all the bream you can get.

If my pond does not produce good fishing, where can I get help?

First ask your County Agent or Soil Conservation Service representative who helped to build the pond. If he cannot help you, write to the Wildlife Resources Commission and describe the problem you may have. We will be glad to help you.

Best wishes,
J. H. Cornell

Fresh water clams spend the early part of their lives as parasites on fishes.

The common toad eats about 10,000 garden pests a year. Its work is worth about twenty dollars.

Banana STOWAWAY

A Nature Short by Jack Dermid

Bunches of bananas arriving from the tropics often contain startling surprises in the form of giant spiders or venomous-looking snakes, and when Owen Kearney of the Beasley Produce Company in Raleigh cut off a hand of bananas to find a curious little nest, he stepped back in anticipation. The nest, about the size of a grapefruit and composed of dried leaves and stems, looked empty.

Kearney was not taking any chances, though, and ripped open the top with the blade of his knife. A little monster—a surprise indeed—reared up through the leaves with its mouth wide open and hissing with all its might. Rows of tiny teeth and big teardrop eyes glistened in the weak light. The strange stowaway was quickly captured and hustled away to the State Museum for identification where Frank Meacham pronounced it a murine opossum. It looks like an opossum, too, with its soft-brownish-gray fur, long whiskers, naked tail and ears, and opposable thumbs on the hind feet. From the nose to tip of the tail, it measures about twelve inches, the tail being half again as long as the body.

The little mammal did not travel alone. Being a female, she brought along a family of seven babies which were attached to her breasts. The young did not resemble their mother at all. In fact, they were little more than partly developed embryos with oversized, grotesque heads and stumpy legs. Their eyes were dark, round spots hidden under naked skin. Premature young are natural for marsupials, but the murine opossum, differing from our opossum, does not have a pouch for holding and protecting its young. Unfortunately, in the excitement of capture and captivity, the babies gradually became detatched from the nipples and perished.

This murine opossum was quite a traveler. Its native home is in the steaming banana groves and jungles of tropical Ecuador, a small South American country straddling the equator. George Beasley, owner of the produce company receiving the bananas, traced out the opossum's travels. It boarded the U. S. S. Helena in Ecuador, sailed up the Pacific coast, passed through the Panama Canal, landed at Charleston, South Carolina, and then traveled by truck to Raleigh.

It is amazing that the opossum was not discovered or did not die enroute. From grove to produce dealer, bananas are subject to much handling. The bunches are dipped to kill insects, weighed, inspected, graded, and loaded and unloaded from vehicle to vehicle many times, and finally stored in ripening vaults until ready for the retail market.

But the stowaway fared well during the journey. The bananas furnished it both food and moisture, the remains of partly eaten bananas near the nest indicating many feasts. In Raleigh, the opossum is still thriving on a diet of bananas, raw beef, and insects. Its favorite food seems to be large beetles which it chews up with great relish while hanging upside down and sounding like someone crunching on popcorn.

This is not the first time a murine opossum has arrived in North Carolina, nor will it be the last. Hitchhikers like modern, fast methods of transportation.

NIGHTHAWKS—VALU ABLE FARM FRIENDS

The Night Hawk or Bull Bat is one of our most unjustly persecuted birds - wholly insectivorous its food consists of harmful insects and grubs - An aerial acrobat it is seen at dusk flying over towns

The gaping mouth and the bristle guides trap insects on the wing - Eyes are very keen

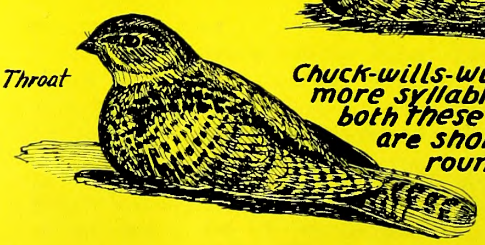
Stomachs have contained more than fifty different species of insects such as wire worm adults - boll and other weevils - cotton worm moths - beetles and aphids - Its call in flight is a repeated "peeent" and no insect can escape its mouth - The birds are protected by State and Federal laws

The bill and feet are small and weak - the second toenail is equipped with a comb - The birds rest on the ground or low branches and fly at night - The tails are clearly notched

White Throat

Whip-poor-will male has white in tail

Buff Throat



Chuck-wills-widow has one more syllable in its call - both these birds' wings are short - tails are rounded

Two eggs are laid either on the ground or on the tar and stone roofs of town buildings

Win Donat

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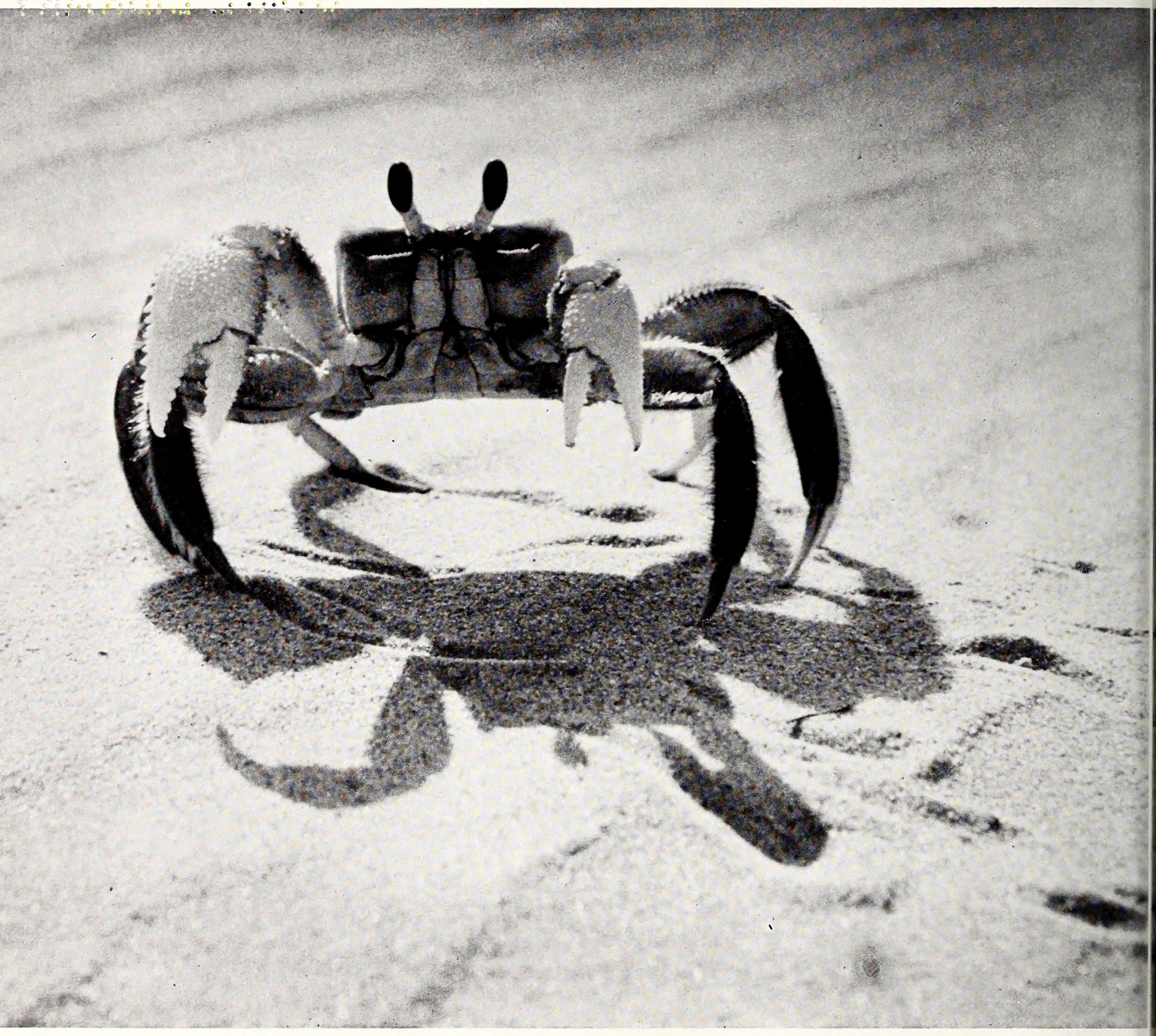

Photo by Jack Dermid

Ballerina of the Beach

The ghost crab of our ocean beaches is an expert at walking and running on its tiptoes. It can move in any direction, but attains the greatest speed running sideways and is difficult to catch. It lives in deep burrows in the dunes, sometimes digging down as much as four feet to reach moist sand. Occasionally seen during the day, ghost crabs appear at night in surprising numbers to feed on small clams, sand fleas, and food washed up by the waves. In some areas, they number tens of thousands to the mile of beach. The crab is well equipped for an existence in a world of sand. If the periscope-like eyes become encrusted with sand, they are lowered and carefully wiped with a pair of feelers in the same way a windshield wiper works on a car.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

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Governor

North Carolina Wildlife Resources Commission

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COVER

Death in the night—the silent drama of a great-horned owl's swoop to eapture a mouse was painted by Will Hon, State College graduate student. Birds of prey are an effieient eheek on harmful rodent populations.

☆ ☆ ☆

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Jack Dermid ..... *Managing Editor*
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☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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Conservation Fundamentals

Fish conservation has had an interesting development. Here are some of the major points in its evolution, shorn of the many qualifying statements which would normally be made if space permitted. The evolution is interesting partly because of its uneven development; in some states it has progressed much farther than in others.

In pioneer days, fish were abundant. The land had been only sparsely settled by Indians, and their methods of taking fish were crude and inefficient enough to prevent depletion. So, in the early days there were plenty of fish to serve as a major supply of fresh meat for the settlers. There were no conservation measures. None were needed.

Regulation

In time, there was local evidence of depletion, especially where easily-caught, spawning runs were harvested extensively. Locally, some regulation of the fishery seemed desirable. Emphasis was on allowing brood stock to spawn. It was felt that there should be closed seasons at spawning time and that the fish should not be taken until they were big enough to have spawned once. There was a tendency, too, to limit the individual catch. The regulations, therefore, involved closed seasons, size limits, and catch limits. The emphasis was strictly on regulation. The laws were imposed by the legal bodies—generally by state legislatures.

Enforcement called for a special set-up, usually consisting of a chief warden and field wardens. These individuals were political appointees. The warden jobs were a welcome addition to those politicos who needed to find a pay check for their faithful campaigners.

Gradually, more and more laws were imposed and more wardens were hired. Since there were no fact-finding programs, the regulations were made more or less arbitrarily.

Stocking

In time, there was a new development. It was found that fish could be produced in hatcheries and rearing ponds. The artificial hatching and stocking of fish fry became a craze. The federal government and the states built more and more hatcheries.

Since fish spawned successfully if given an opportunity, producing fry in rearing ponds was a simple matter. The discovery that trout eggs could be stripped out and artifically fertilized led to a simple procedure for producing trout fry. After a very little experience,

The discovery that fish could be produced successfully in hatcheries and rearing ponds brought on a new era in fish conservation. The number of state and federal hatcheries skyrocketed, with the state programs financed by sale of licenses.

political appointees could handle the hatcheries. Here, then, were more jobs for the faithful.

The expanded "fish conservation" program called for the spending of considerable sums of money. To pay for the cost of the state programs, anglers were required to purchase licenses. Here the taxation was directly on the "consumer." The income from licenses was generally turned over to the general fund. The legislatures then decided on how it was to be used. Necessarily, due consideration was given to the political values.

The Peaceful Days

Conservation became a simple routine. If sportsmen in a locality became dissatisfied, a load of hatchery fish fry usually lulled them back to complacency. If this wasn't enough, they might be given a few additional cans of fish, or a few new restrictive laws would be imposed. If the anglers were especially hard to please, they might be given an added warden, or a replacement for the warden already on the job! These were the peaceful days of fish conservation. The political appointees had only one major problem—to please the voters. For quite some time they had a simple means to that end—more fish fry, more regulations, more wardens.

There was only one thing wrong with the "fish conservation" program—it didn't help fishing! There were harder days ahead . . .

by R. W. Eschmeyer

Reprinted from *Sport Fishing Institute Bulletin*
Photos by Jack Dermid

Fact-finding programs revealed that a lake or stream is very similar to a pasture. The rate of growth of fish depends on the amount of food available in the water.

Sportsmen, dissatisfied after a few poor days afield, turned to other panaceas. Some felt that there was too much inbreeding, and asked for new stocks. Some blamed the predators, with predator control programs resulting. Almost invariably the anglers wanted any species introduced which were not already present; a program of introducing all sorts of species into all sorts of waters followed. There was argument over which laws should be imposed, leading to the passing of innumerable local laws, imposed by the legislature to please local groups. The regulations became highly complicated.

The political appointees were having more and more difficulty in their one major job—keeping the anglers contented.

Trouble Shooters

Finally, and perhaps in desperation, they employed biologists, usually biology professors who had time to spare from their teaching during the summer months. The biologists served a worthwhile purpose from the start, as trouble-shooters. The administrator could restore contentment, momentarily, by sending the biologist to trouble areas, and by indicating to the public that "we are studying the problem."

But, the biologists weren't content with the "trouble-shooter" role. Typical of their breed, they were conscientious people who wanted to find the answers. In time, they found some. The answers, though, were embarrassing to the administrators. They tended to demonstrate that the methods of "fish conservation" which were in vogue were ineffective. They discovered, more and more, that the medicines in use did not cure the ailment. But, they failed to come up with new remedies. It was an embarrassing period for both the biologist and the administrator, as well as for the hatchery man and warden whose products or services were now subject to question.

Meanwhile, the public was inclined more and more to rely on specialists—on doctors, lawyers, engineers, agricultural experts. So, naturally, the public was beginning to place reliance on the trained fishery experts. This led to internal difficulties. The politically appointed administrators, wardens, and hatchery men, who originally considered the biologists with their big words and their devotion to their jobs to be an interesting novelty, now began to think of these specialists as potential competitors for their jobs. The biologists were openly ridiculed. But, they stuck to their knitting. In some instances the ridicule was deserved; many biologists failed to recognize the human angle. Some were impractical. Some were obviously deficient in "bedside manner."

The Pasture

Most important was the observation that a lake or stream is really a pasture, with extremely prolific "livestock," and with the rate of growth depending on the amount of food available. It was found that fish needed more than just water; that other conditions needed to be favorable, too. It was discovered that a small fish wasn't necessarily a young fish—he might be an underfed old-timer! The technical fellows learned about food chains; a bass eating small fish which eat insects which subsist on microscopic food isn't equivalent to a sheep eating grass. It's equivalent to a super-predator eating wolves which eat sheep which eat grass. This explained quite clearly why our lakes and streams couldn't be "half fish and half water!" The biologists gradually learned many things even though they couldn't find a simple answer to the question of how to give "ideal" fishing to all anglers.

Administrators

Meanwhile, the internal feuding led to interesting developments. In some states the political administrators were replaced by other people. Hatchery men were given the top fishery jobs in some states, wardens in others, and biologists in still others. In every instance, some individuals developed a broad viewpoint and did a good job. Others retarded conservation in their states. Today, we have administrators in all these categories.

The political appointee doesn't object to good conservation, but he also tends not to promote it. His main

interest is in keeping the voter happy and in hanging on to his job. Since conservation education might lead the public to suspect that he isn't competent, he generally is opposed to public enlightenment.

The one-time warden, as an administrator, may tend to over-stress enforcement. Often, he tends to object to fact-finding, to education, or to change. He doesn't want to change the "status quo."

The fishery administrators who came up the hatchery ladder naturally tend to favor stocking. Some do everything possible to retard progress; others are doing a good job in the administrative capacity. In several states these men have definitely opposed fact-finding. They may have one or a few trained men on the staff, because of public demand, but the men are held down and some of their findings are kept from the public. These hatchery men spend most of the funds on more and more stocking. A few even go in for put-and-take warm water fish stocking, without letting the public know that the cost of raising bass to catchable size in hatcheries is exhorbitant. These "administrators" usually have very limited fish conservation education programs. They don't want an enlightened public for obvious reasons. Where they have been in power for years, the public is usually poorly informed, and even the commissioners may not know that their fishery program is an unenlightened one. The states tend to be backward in fish conservation. As indicated above, in some states the hatchery men, after being made top fishery administrators, keep up with the times and have progressive sets-ups.

The tendency is, more and more, to put formally trained fish men in charge of the state fishery programs. These men, trained as biologists, may have trouble in public relations but in general the programs which they advocate are the most progressive.

In the interesting evolution of fish conservation the need for formally trained fish men is now generally accepted—following the same evolution as we have had in medicine, engineering, and other specialized fields.

The Present Picture

As for the current fish conservation picture, enough is known now to present it rather graphically. Here it is:

1. We have more and more anglers. Fishing pressure increases constantly.

2. A lake or stream will produce only a limited amount of "livestock." The average acre of water in the United States probably supports only about 100 pounds of fish.

3. Of these fish, only a portion are of the size of species wanted by the angler. In many waters the desired fish are in a minority.

4. Of the available supply, only a fraction can be caught. The hook and line is inefficient. This point will be easily appreciated if you try "fishing" for rabbits—baiting your hook with a piece of carrot and waiting (hidden) for a rabbit to take it! On many of our big waters the catch is only a small fraction of the available supply.

5. Because of siltation and pollution, many waters can no longer support as big crops of fish as they once did.

In view of the above observations it's easy to see why the average catch gradually dropped with increased fishing pressure. It dropped to where the average catch was less than one fish per hour, and the average fish was less than ten inches long.

Now, we have growing evidence that fishing is improving. The trained fishery fellows are learning, more and more, how to manage our waters. They are becoming more efficient in handling our fish management tools: (1) stocking, (2) regulation, (3) environmental improvement, (4) controlling fish populations, and (5) creating more fishing waters.

To use the tools still more effectively we need more fact-finding and a more enlightened public. Consequently, in those states which are trying to progress rapidly the emphasis is on research and on conservation education. If your state isn't emphasizing these two items, it's not doing a good job.

There are still problems, many of them, but we're now optimistic about the future of fishing in some states. We're less optimistic about some others because they have not yet moved far in their fish conservation "evolution."

In future issues, we'll discuss the fish conservation "tools," one at a time.

A CASE SEWED UP — WITH . . .

Wire

by Rod Amundson

Two pieces of insulated wire, one red and one green. Not much evidence, but they led along a trail that wound for nearly two months in three counties and ended—almost—in a courtroom trial that would have set a landmark on the long and difficult road of fish and game law enforcement.

It is Sunday morning in late March. The scene is Morgan Creek, Orange County. Wildlife Protectors Robert Logan of Chapel Hill and Marvin Ward of Durham were making a routine check of anglers at the fishing hole. It had rained all day Saturday and Saturday night. The ground was muddy and the footprints of fishermen of the day before were almost obliterated.

Logan noticed the wire first, a length of fine insulated wire with a red fiber wrapping, the kind that is used to detonate explosives electrically. A fisherman using worms for bait snagged something and hauled it in. A similar piece of wire, green in color. These two pieces of wire are slender but convincing evidence that someone had used explosives, possibly dynamite, to kill fish in the deep hole.

Sketch by Duane Raver

Downstream, in a bend of the creek, are some grass and weeds. Washed against the weed bed are several small fish, dead but fresh. Two pieces of wire; two or three dead fish; nearly two months to go before the court trial which was never held.

The word "investigation" looks trite and concise on paper. It does not quite convey the meaning of countless hours in daylight and dark asking questions, matching statements, piecing a word of hearsay here with an obvious fact there.

Logan and Ward began a systematic investigation which led them from the immediate neighborhood through three counties. Questions, questions, and more questions. Local people, some not quite sure, heard what might have been a blast in the Morgan Creek vicinity sometime early Saturday night. Fishermen who were known to frequent that particular fishing hole were interviewed. One, then another disclosed that he had been at the scene of the blast on Saturday night. Yeah, I was there, and I saw it go off. Made a lot of noise. No, I won't say who it was set the charge off. I got to live with my neighbors, you know.

One name, then another, then another came to light. Suspects only. You can suspect a man of crime, but you can't convict him in court without evidence. More investigating to be done.

Logan and Ward started the tiresome job of interviewing and checking the records of every dealer of explosives in Durham, Chatham, and Orange counties.

A farmer said that one of the men under suspicion had tried to borrow some dynamite from him but had refused the request. A contractor said that the same man had asked the same favor and was refused.

Three names to check against thousands of names entered in record books of explosives dealers. Hour after hour more names of people who had bought explosives to blow up rocks or clear stumps. Finally, success. There, entered with dozens of other names, was the name of

•——————————See CASE page 19

Soil Conservation Service Photo

Who wouldn't come home whistling with a string of fish like this? Huge catches are not common in North Carolina these days, but with the help of modern fish management, we can count on better luck in the future.

FISHING *In North*

When a group of trained fish investigators tackle the fishing situation in our state, facts come to light which indicate that fishing is about like other things that are affected by man's activities. It's just what we make it.

The following story is true. Only the names have been changed to protect innocent fishermen. The location could be any community in North Carolina with extensive areas of culivated land, expanding industry, and growing municipalities. In other words, the events of this story are most common in localities that are making rapid technical and economic progress.

Time—7:00 on a hot Friday afternoon in August. An old man greets his grandson returning empty-handed from a fishing trip to a small creek.

"I told you there won't no fish in that creek, Willie. It's been dry for a month, and even if that rain last week did start it to running again, it didn't put no fish in it. There ain't been no fish caught out of that creek to amount to anything in 15 years.

"When your daddy was a boy I could catch a mess of fish down there while your grandma was fixing breakfast. Sometimes I'd catch so many they'd spoil before we could eat 'em all. There won't no neighbors around to help eat 'em, cause all the land around here was in woods, 'cept what I could tend with a mule. 'Course there won't much time for fishing with no tractors to do all the work in one day a week.

"No sir, fishing ain't like it used to be. Even the ponds everybody's been building are no good in 3 or 4 years. Yep, times sure have changed."

The good part about this story is that times have changed. The sad part lies in the fact that fishing too has changed. Fishing is not as good in North Carolina as it has been in the past. But with fishing, as with everything else, something causes any change that occurs. There is nothing supernatural about the changes that occur in the biological world with each new generation. The scientist's inquisitive, unbiased study reveals the causes of most biological mysteries, thus providing the basis for remedial action.

The personnel of the Fish Division, North Carolina Wildlife Resources Commission, has had the fishing situation under observation for sometime now. Their job: get better sport fishing in the fresh waters of North Carolina.

Their research has identified the causal agents as by-products of our advancing civilization and rapidly expanding population. The things Willie's grandfather mentioned as changing since his day are the very things that have lengthened the time between bites in North Carolina. For instance, more and more land is being cleared for farming every year. Forested land absorbs much more water from a given amount of rainfall than cultivated land. As the amount of woodland decreases, the water table drops, resulting in many small streams going dry during the rain-scarce summer months.

To make a bad matter worse, topsoil from unprotected farmland is dumped into streams by the eroding power of excessive amounts of runoff rainfall. The deep holes that once served as natural reservoirs during droughts have long since been filled with silt, making many small streams almost barren of fish. In larger streams the silt settles into the spawning beds of game fish, smothering the eggs of bass, bream, crappie, and various other species that lay their eggs in still, shallow water.

Many new factories have been built and towns and cities have expanded tremendously to provide jobs and

Carolina

by Luther Partin

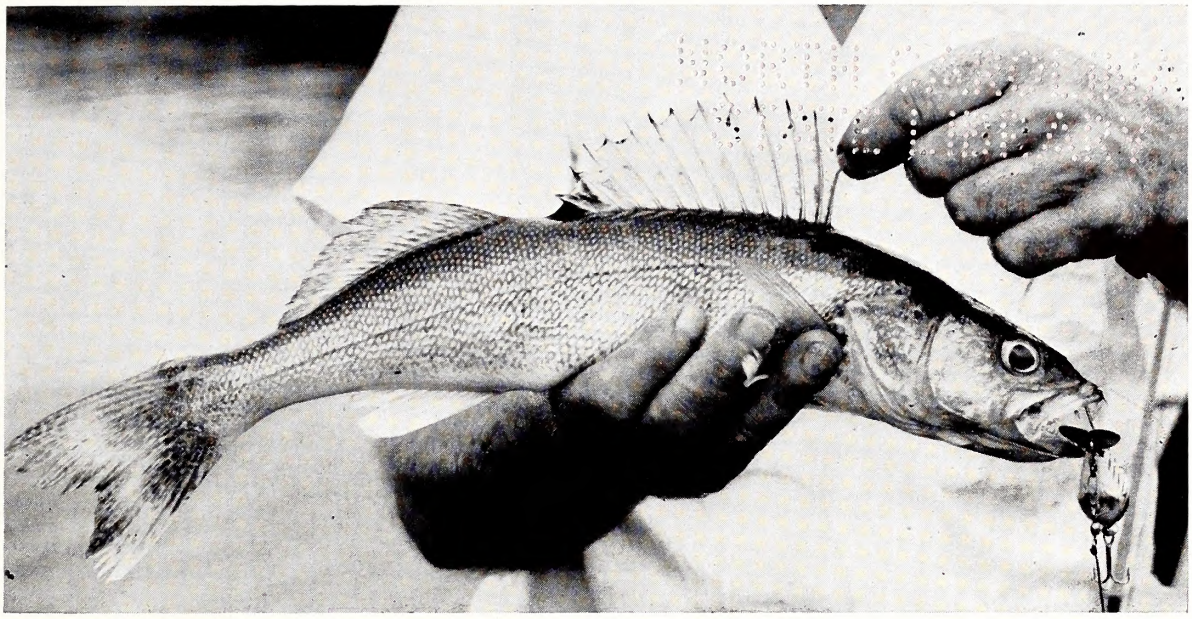


Photo by Jack Dermid

One solution to fishing problems is the introduction of exotic species, such as the walleye above, which can adapt itself to the changing water conditions found in power reservoirs. The introduction of walleye has greatly improved fishing in western North Carolina.

homes for the ever-increasing human population. But these desirable economic changes have had undesirable effects upon game fish populations. Increasing amounts of waste chemicals have been piped into N. C. waters by industrial plants not having facilities to utilize or render the chemicals harmless. Towns and cities without sewage treatment plants have channeled raw sewage into the nearest waters. Thus, industrial and municipal pollution of waters has contributed to the decline of fishing by making some waters uninhabitable for many varieties of fish.

The increasing population, with more leisure time than past generations, are putting more fishing pressure on the game fish each year. This gives rough fish, such as carp, grindle, gar, and catfish, an opportunity to grow and multiply unmolested. Their superior numbers and size enables them to monopolize the food supply in some waters, in addition to the damage they inflict by eating small game fish and raiding game fish beds for the eggs.

The above are the major obstacles to better fishing in North Carolina's fresh water sounds, lakes, and streams. There are other contributing factors which will be mentioned in detail later, as we take a look at the Fish Division's statewide program for improving sport fishing in North Carolina.

The Fish Division has recognized the three distinct physiographic regions of North Carolina as having different types of habitat, or living conditions for fish. Accordingly, it has instituted three fish management programs, one each for the Coastal Plains, the Piedmont, and the Mountains.

Much of the sport fishing in the Coastal Plains is provided by the inland waters of rivers and sounds. Fish Division biologists found that the primary problem in this area has been a decreasing number of game fish and an increasing number of rough fish. They concluded that this situation had been caused by a continuously changing habitat, the result of industrial and municipal pollution and silt deposition. Meanwhile an ever-increasing number of fishermen seeking crappie, bream, and bass has added further to the decline of game fish numbers. Many rough fish lay their eggs freely in moving water, where pollutants are least damaging. Some rough fish get along fairly well in highly polluted water. The result has been that they have become so numerous in some Coastal Plain waters as to present a problem to sport fishing.

A rough fish removal investigation project was begun in 1951 (see July, 1954 issue WILDLIFE IN NORTH CAROLINA), to discover the most practical method of restoring the proper balance between game fish and rough fish. It is hoped that removal of rough fish will make more food available for the game fish present, allowing faster growth, and cutting down on the egg and fish-eating activities of rough fish, permitting more game fish to grow to catchable size.

The operation consists of taking fish alive in nets and traps, recording the number and weight of game fish and returning them to the water, and keeping all rough fish to be sold. Positive results have already been shown, in that the number and weight of game fish caught has increased recently, while the number of rough fish has declined. Of course, the Wildlife Commission cannot possibly remove non-game fish in all the waters concerned, except as a commercial activity. But the operation has shown that it may be possible to materially reduce rough fish populations by regulations permitting fishermen to use devices which will remove rough fish without damage to the game fish populations.

At this point a word about fish stocking might be worthwhile. The Wildlife Commission operates fish

Rough fish, in large numbers, can harm sport fishing. This grindle, or blackfish, had two medium-sized perch in its stomach when caught. Rough fish are a fish management problem in some waters of the Coastal Plain.

hatcheries for stocking fish in waters that are open to the general public, but does not stock private ponds or lakes. Fish for stocking private ponds may be obtained through the Soil Conservation Service without charge. It is generally agreed that stocking is of little value if the desired fish are already in the water and reproducing satisfactorily. In the case of the rockfish, or striped bass, the Wildlife Commission operates a hatchery, in cooperation with sportsmen, to hatch eggs that would otherwise be lost. The Commission buys the eggs of female rockfish caught and hatches them. The fry are stocked in suitable waters to insure the continuance of the species and increase the range where possible. Some other stockings of game fish are carried out where food and water conditions are good, but fish are not plentiful. Several of these instances will be pointed out later.

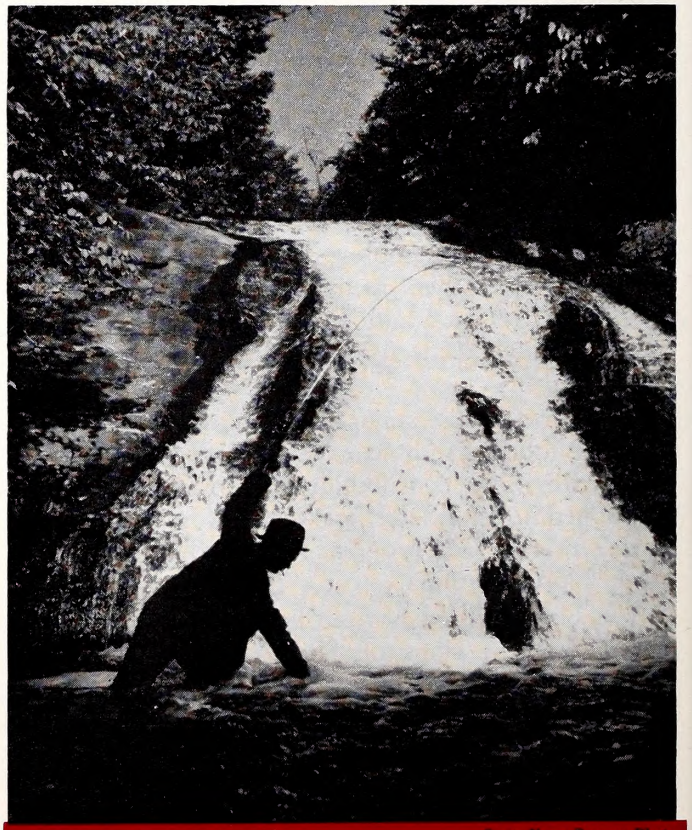
The most important fishing waters in the Piedmont are the large power lakes of the Catawba and Yadkin rivers, and smaller lakes and farm ponds. The power lakes are used to impound flood waters and to provide electricity. Consequently, they fluctuate seasonally and daily. These fluctuations cause destruction of eggs in the spawning beds of game fish, such as bass, bream, and crappie, which spawn in shallow, still water. The cooperation of power companies, in keeping a constant water level during the spawning season in a few lakes that are not absolutely necessary for power generation, has greatly improved fishing in the waters concerned.

But there are lakes that must be used daily for electricity and lakes having an uncontrollable seasonal fluctuation to hinder fish reproduction. In some of these lakes, Fish Division biologists found that conditions were favorable to the introduction of exotic game fish adapted to the waters of power lakes. The deep, cool lakes were found to be suitable for walleye pike, as they spawn freely in tributary streams flowing over rocky bottoms. Eggs spawned in this manner are not severely damaged by water level fluctuation or silt in the water. A shipment of walleye eggs was received from N. Y. state, hatched and stocked in several suitable lakes in 1950. Two years later, some of the stocking appeared in the fisherman's catch as 15-18 inch adults. The introduction of walleye has doubled the number of game fish caught in some waters. When the program was concluded this year, lakes Chatuge, Fontana, and Hiwassee in the mountains, and lakes Rhodhiss, Hickory, and James in the Piedmont had been stocked with walleye.

Some waters that were too shallow or too warm for walleye were noted to be suitable for white bass. White bass can withstand higher degrees of silt pollution than walleye, and also spawn freely in flowing water. A successful stocking of adults was made in the Catawba River below Mt. Island Dam in 1952, and white bass are now in that section in fishable numbers. Additional stockings have been made with adults collected below Mt. Island Dam, as well as with others obtained from Tennessee. Stockings to date include: all reservoirs of the Catawba chain south of and including Lookout Shoals Reservoir and Lake Michie, in the Piedmont; and the Tar, Neuse, and Cape Fear rivers, in an attempt to establish the species in eastern North Carolina.

Most of the farm ponds in the state are located in the Piedmont, although there are many in the Coastal Plain, and some in the mountains. A lot of these ponds have failed to provide good fishing after their third or fourth year. Fish Division biologists have carried out investigations which indicate that the recommended stocking of 1,000 bream and 100 bass per acre puts too many bream and perhaps too few bass in a pond.

•——————————See FISHING page 20



State News Bureau Photo

Trout stocking is necessary in mountain streams because of the heavy fishing pressure and small size and poor food conditions of many trout streams.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

"Better Fishing" Prints Available From District Supervisors

A print of the Wildlife Commission's new motion picture entitled "Better Fishing" has been placed in the hands of each of the nine wildlife protection supervisors in the nine Commission districts. Persons may request the film from these men. If they cannot make the film available, requests should be directed to the Commission's Raleigh office where nine additional prints are available.

Following are the names and addresses of each supervisor, together with a list of counties from which requests should be directed:

DISTRICT 1, Hugh A. Robertson, Box 203, Hertford: Bertie, Camden, Chowan, Currituck, Dare, Gates, Hertford, Hyde, Martin, Pasquotank, Perquimans, Tyrrell and Washington.

DISTRICT 2, Raymond A. Watson, R-2, New Bern: Beaufort, Carteret, Craven, Duplin, Greene, Jones, Lenoir, Onslow, Pamlico, and Pitt.

DISTRICT 3, C. N. Woolard, Box 562, Wilson: Edgecombe, Franklin, Halifax, Johnston, Nash, Northampton, Vance, Wake, Warren, Wayne, and Wilson.

DISTRICT 4, E. W. Caine, Box 924, Lumberton: Bladen, Brunswick, Columbus, Cumberland, Harnett, Hoke, New Hanover, Robeson, Sampson, and Scotland.

DISTRICT 5, Tom L. Rollins, Box 907, Sanford: Alamance, Caswell, Chatham, Durham, Granville, Guilford, Lee, Orange, Person, Randolph, and Rockingham.

DISTRICT 6, Frank R. Wade, Box 802, Albemarle: Anson, Cabarrus, Davidson, Mecklenburg, Moore, Montgomery, Richmond, Rowan, Stanly, and Union.

DISTRICT 7, W. F. Edmisten, Boone: Alexander, Alleghany, Ashe, Davie, Forsyth, Iredell, Stokes, Surry, Watauga, Wilkes, and Yadkin.

DISTRICT 8, Dwight G. Rivers, Jr., 629 E. Concord Street, Morganton: Avery, Burke, Caldwell, Catawba, Cleveland, Gaston, Lincoln, McDowell, Mitchell, Rutherford, and Yancey.

DISTRICT 9, Howard L. Wooten, Box 206, Clyde: Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, Polk, Swain, and Transylvania.

The 4-H Wildlife Conference is held each year in the land of the beaver—the Sandhills Wildlife Management Area near Aberdeen. Beaver were successfully re-established there in 1939 and have been increasing steadily since with the population now numbering nearly 1,000. A highlight of the conference is a tour of the refuge where the campers will have a good chance of seeing this water conservationist in action.

All campers are fascinated by Biologis
trapping and furbearers. Perhaps the
their own and the girls think of mink

4-

WILDLIFE

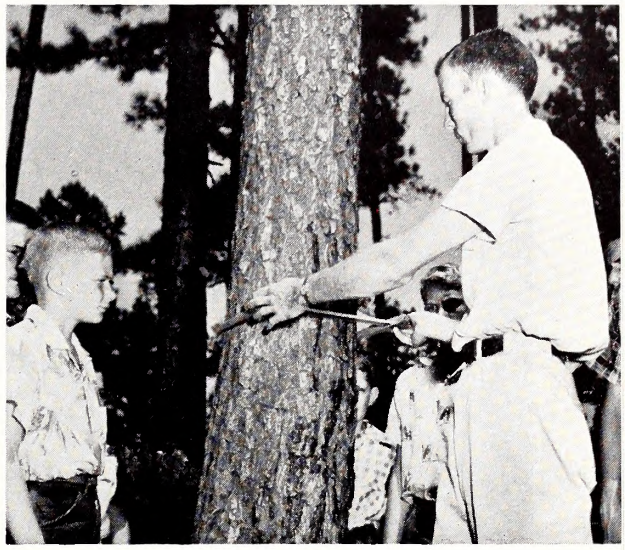
PHOTO FEATURE B

Wildlife needs a good home—plenty of food and protective cover—in order to thrive. Here Biologist Ted Mitchell talks of proper land management and the use of bicolor lespedeza and multiflora rose.

Every youngster likes to shoot a gun, and Wildlife Patrolman Bill Kinsey stresses safety and the proper handling of firearms at the rifle range. The number of expert marksmen among the campers is surprising.

's talks on
raplines of

Bill Hamnett, wildlife education representative, conducts regular classes in nature study. The outdoors is the classroom where pupils learn by seeing for themselves.



Sound forestry management is important to farm economy and to wildlife. Here Forester Arnold Boswell instructs a group in the technique of scaling timber.

AMP

MID

The week of August 23rd will be a busy one at Camp Millstone Rock in the Sandhills Wildlife Management Area. The annual 4-H Wildlife Conference will be in session, and nearly 100 boys and girls from all parts of the State will be reveling in outdoor fun and living.

The conference is not all fun and frolic, however, but a conservation workshop where the youngsters will learn much about wildlife and the wise-use of our natural resources. A series of classes will be conducted by personnel of the Wildlife Resources Commission. The topics will include forestry, fish and game management, law enforcement, nature study, furs and trapping, wildlife photography, and the sports of fishing and marksmanship. The campers will be studying their favorite subjects, though, for each was selected to attend camp on the merit of his 4-H Wildlife Record Book compiled during the preceding year.

The boys and girls will come to camp, as they have in past years, with a great enthusiasm to learn more about wildlife and conservation and will return home with a better understanding of the outdoor world about them. Since these youngsters will be the sportsmen of tomorrow, the conference is a sound investment in personnel, time, and money. The Wildlife Conference is sponsored by the State 4-H organization and the Federal Cartridge Company with the Wildlife Resources Commission cooperating.

What is wrong with fishing in that farmpond? Duane Raver, fisheries investigator, uses a microscope and fish scales to demonstrate what happens to bluegills when a pond is overpopulated.

The conference is not all classwork. Morning and afternoon periods are reserved for swimming and other outdoor sports. There are big bass in Millstone lake to tempt young anglers.

The author and his deer—taken by his partner who was suffering from "buck fever."

DEER DIARY

by Rev. Robert A Eibling

Photos by Author

The author takes the story of "The Preacher and the Bear," makes some character changes and comes out with a thrilling, suspenseful story with a happy ending.

"Go up the trail to where it forks, cross the dry branch, then find a place near the barbed wire for your stand." So Charles and I parted. My trail led across the dry branch and onto the point of a ridge just above the meeting of the dry branch with a small creek. The intersection of the two branches was hidden in honeysuckles.

The place for my deer stand was about 100 feet from the juncture of the two branches and equidistant from each. It was right near the barbed wire that marked the boundary of Charles Propst's land.

Having arrived at the spot where I was to spend all the daylight hours of the day's deer hunt, I proceeded to arrange all the details. The base of a pine tree looked like a good place. From it I could see most of the center ridge on which I was, the two opposite ridges, most of one hollow, and the honeysuckle patch at the juncture of the two branches. Because I shoot best only to the left, I placed myself so that the best deer trails were on my left. I pushed all the dried leaves away that my feet would rustle, and broke down the few twigs and sprouts that might make a noise if brushed with a gun barrel. I removed the contents of my hiking bag and put them behind the tree so I would not accidentally bump them. The empty hiking bag became my seat for the rest of the day.

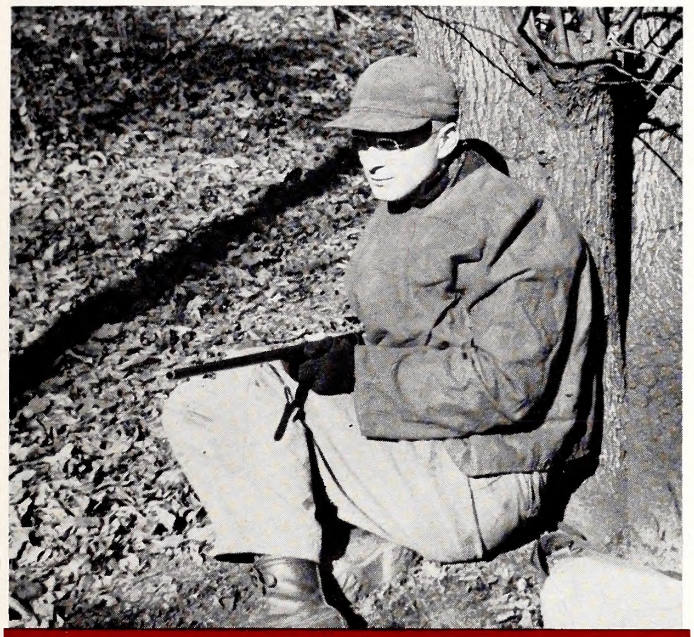
Just before I settled down for the all day sit, I pulled on my extra sweater and a bright red shirt over my leather jacket. Thank goodness deer are color blind or they would see me a mile away with this vivid red shirt. I settled down against the tree, and now as far as I am concerned, all will be quiet until either I shoot or go in at dark. The time is 7:10, and it promises to be a perfect day for a hunt. The sky is clear, there is just a breath of wind blowing from over my left shoulder. It is real quiet, so quiet that a leaf falling to the ground 15 feet away seems unnecessarily loud.

The sun has not come up over the ridge, it's below freezing, but I'm not cold yet. All I do is sit and slowly scan my field of view from as far to one side and then to the other as my head will turn. One circuit takes me about a minute, I move my head so slowly. I'm all ears and eyes, straining for the slightest noise or movement in my domain.

At about 7:30 I have my first visitors. A covey of black-capped chickadees accompanied by a Carolina wren and two nuthatches, that persist in walking head first down the tree trunks, come toward me. They are busy with their gossip while searching out breakfast under bark and leaves.

Quiet reigns again; there is the slow scanning of the surrounding area. My toes are getting colder, but they will not freeze no matter how uncomfortable they may feel. The hand warmer in the left palm gives a little warmth and much moral support.

Suddenly the quiet is broken by a riveting wood-



The author straining eyes and ears for the slightest sign of an approaching deer.

It's a warm but happy chore, carrying in the results of a successful hunt.

pecker. He is sitting on the old chestnut snag on the ridge side to my right. I can even hear the chips fall as they hit in the leaves. I soon spot the "woods-hen" and then off he flies, squawking, to bother some other hunter over the ridge. It's quiet again.

Off to my left, down in the dry branch there is a rhododendron thicket; I hear rustling of leaves in it. I strain to see what it is. It is suddenly quiet, then there is the noise—something moving in the leaves. I grasp my gun, but still I cannot see what is causing the commotion. After about 10 minutes of suspense out comes a gray squirrel. Is he ever big and fat—almost the size of a cat! He works across the ridge behind me and about 30 feet away—apparently he never sees me. My gun is lowered to my lap, and all is quiet in the woods.

Now I note that I have been sitting here for an hour already. It is time to move a little and change my sitting position. It's still quite cool, but the sun will soon be over the ridge. Having changed my position slightly, quietly, and with the least amount of movement, the second hour starts. The air is still moving down the ridge. The only sound to be heard is an occasional shot of another deer hunter. When you hear one shot, it means a probable kill; two shots—the hunter may have his deer; three or more shots—the hunted was missed by the hunter, in other words, no deer; and when the hunter gets back with the crowd—no shirt tail.

The second hour is almost gone; the sun will soon be hitting me; but it is not too cold to be unbearable.

What is that noise in the leaves way up the ridge behind me? Easy, do not turn that head too fast. Grasp the gun. Turn the eyes more to the left. There it is, a movement of a dark mass. Do not be too hasty, is it a man or a deer? It's a deer!! Slowly get your back from against the tree trunk so your clothing will not make any scraping noise. Take off the safety and bring the gun slowly, so very slowly to your shoulder. Finger off the trigger. The deer is coming closer and closer. It stops, but its head is behind a tree. It moves, but too fast to see if it has antlers. It stops in the open 50 feet away. Look close—any antlers? No, none. It's a doe. On goes the safety and slowly the gun comes down. The doe still does not know of my presence, so why not see what she will do next.

The doe picks up an acorn. She looks around carefully, moves closer, works her big ear and eats another acorn. I sit perfectly still, not even batting an eyelash. I'm just a stump in the woods. She looks straight at me and still does not see me as a hunter. She eats some more, moves down and across the dry branch, and up the opposite ridge. Then I loose her in the shadows. It's peculiar how warm I got during the few minutes the doe was within reach of my senses.

At last the sun is hitting me, and it feels good. A yellow jacket is also warmed up and starting to fly around me. Another hour passes and I move myself a little.

Then there is that sound in the leaves on the ridge behind me. I go through the same procedure as when I spotted the first deer. Again it is a doe, apparently following the trail of the one that had gone by about 45 minutes before. This one comes closer, and I decide to try some experiments. I whistle softly the call of a cardinal—no response. I try again, louder; the doe continues to feed on acorns. Then I blow air through my pressed lips in a short squeak—the doe comes immediately to attention. Her ears move, her nostrils work, but she does not spot me. I sit absolutely still. She starts to move on; I squeak again; she freezes and

•——————See **DEER HUNTING page 20**

Photo by W. R. Turner

An aerial view of the Vance County Wildlife Club's landing, showing parking lots, picnic areas, boat mooring facilities, and cars and boats of sportsmen who are visiting the landing in ever-increasing numbers.

FABULOUS LAKE KERR

by Archie Rozier

As you approach Henderson, North Carolina from any direction, the first things you notice are automobiles hauling boats, trailers, and fishing poles toward the beautiful Kerr Lake. People in this area are taking advantage of the fine recreational facilities that this large body of water offers.

At first, it was unbelievable that the water would remain clear the year round, but so far, such has been the case in the Nutbush Creek area which reaches down into North Carolina toward Henderson. The clear blue water of this portion of Kerr Lake reminds one of the Gulf Stream.

Now that summer is here, fishermen and water enthusiasts are ready for a big season on Kerr Lake. The Lake at its present normal 300 foot mark (MSL) has a shoreline of 800 miles.

Fishing has been excellent, in fact, it is almost beyond belief that the bream and crappies are as large as have been caught. The standard question of fishermen around the Lake is "How did so many get so big so quickly?" Last Fall crappies were caught that weighed as much as 1½ lbs. and ¾ lb. bream were caught last summer by the thousands. As for the bass fishing, it should be generally good this season. They were small last year but were in the Lake in great numbers. Much to the delight of local fishermen, bream and bass have recently started hitting on fly rods. The fishing on Kerr Lake is unsurpassed in this area. The State of North Carolina and the State of Virginia have recognized this fact and have entered into a reciprocal agreement whereby a statewide fishing license issued by either state will be honored anywhere on the Lake below the Clarksville, Virginia bridge. Kerr Lake provides not only good fishing grounds, but also duck and goose hunting, boating, water skiing, swimming, sight seeing, and picnicking.

The Vance County Wildlife Club, Inc. has a landing on Little Nutbush Creek in the midst of some of the best fishing waters on the entire Lake. The Club has a good supply of boats, motors and fishing equipment available for rent to the public. Livebait, worms, gasoline, oil and mooring facilities are also available. There are picnic tables and outdoor fireplaces available for use by the public. The concession stand offers a variety of sandwiches and soft drinks. The Vance County Wildlife Club Landing can be reached by leaving Henderson on N. C. Highway No. 39 north, going to Townsville and turning east at the Townsville High School.

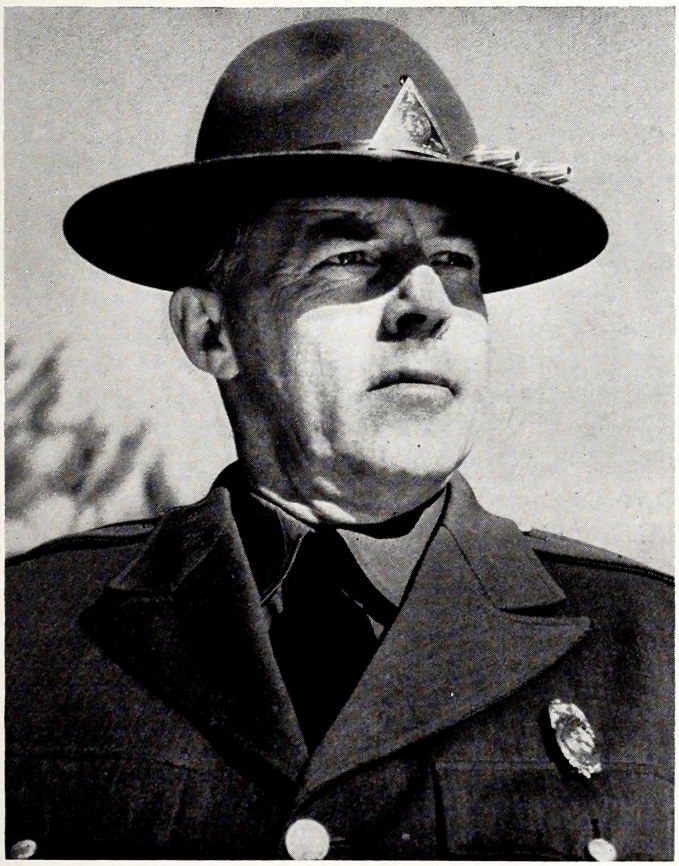
Overnight accommodations are available at the two hotels and many motor courts in and around Henderson.

The John H. Kerr Development Commission, which is administering the development of the Nutbush Conservation Area, has received numerous applications and inquiries from individuals, wildlife clubs and other organizations concerning the leasing of land for clubs or cottages on the Lake shore. Colonel J. C. Cooper, Chairman of the Commission, has advised that the Federal Government has not yet made any land available for private use, however, the master plan being prepared by this Commission has made provision for group camps and cottage sites as well as private cottage sites. This proposal must first be approved by the Corps of Army Engineers, who has intimated that wildlife clubs desiring sites for private use only will have a lower priority than those which will be open for public use. Col. Cooper also reports that a number of applications for lease sites have been directed to the Reservoir Manager, Box 668, South Hill, Virginia for lease sites that are not within the jurisdiction of the Nutbush Conservation Area.

At the present time there are several private land owners who have desirable lots for sale.

The popularity and public acceptance of this area are already beyond the highest expectations of those interested in its development. Ideas and plans are having to be revised upwards constantly, and only time will tell the magnitude of the Kerr Lake development.

PROTECTOR OF THE MONTH



Robert D. Perry

In years of service, Robert D. Perry is one of the oldest employees of the Wildlife Resources Commission. A native of Wake Forest, he attended high school there, and was first employed as a Wildlife Protector in 1937 when he was given a temporary appointment by Mr. John Chalk, then Commissioner of the Division of Game and Inland Fisheries, Department of Conservation and Development.

Appointed to work in Wake County, Mr. Perry, better known as Bob, has worked in that county ever since, with occasional temporary assignments to assist with law enforcement work in other areas.

His long record of service speaks for his character, loyalty, and dependability. He is married and has one son, Robert, Jr., who resides in California.

It would be impossible to estimate the number of persons Bob has apprehended and indicted for fish and game law violations, but it is significant that a majority of these people have become his friends.

Enforcement Division Record For May

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of May, 1954:

Persons checked	**68,527**
Prosecutions	**936**
Convictions	**872**

A total of $6,685.10 in fines was collected and paid into the school funds of the counties in which the convictions were obtained. Fines were not collected, being either suspended or not levied, in 46.44% of the total number of convictions.

Two out-of-season bear hunters, who recently assaulted and seriously injured a Wildlife Protector in the western part of the state, each drew two and one-half years in a federal penitentiary upon conviction in the United States District Court.

It's the Law!

Question: Would a fisherman be violating the law by exceeding the creel limit if he were to catch seven bass from public waters and then continue fishing, returning each additional bass caught to the water unharmed?

Answer: Probably not, if he retained the original seven bass and released the last bass caught in each case.

On the other hand, if he kept the original seven bass alive and, upon catching the eighth, released the smallest bass in his possession, we believe that he would exceed the creel limit by catching a ninth although at that time he would have only eight in his possession.

In such a case, he would have caught seven bass with the conditional intention of keeping them if he could not catch a larger bass. We do not believe that his subsequent change of heart toward one of the less hefty specimens could relate back so as to purge his original intent to keep it unless it could be replaced by a fish of more desirable dimensions.

Under these circumstances he would have reached the legal creel limit upon catching eight bass of legal size.

Conservation of Human and Natural Resources

School Page by Lunette Barber

Photos by Luther Partin

A look at Rocky Mount's public-spirited recreational program.

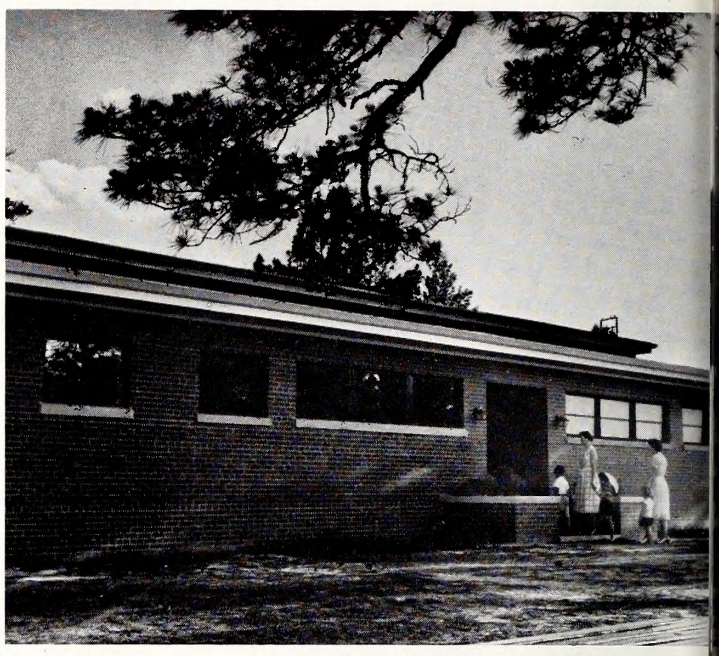
How much time do people spend earning a living? Statistics say 46%. What is done with the remaining 54%? It is generally recognized that too much of the 54% is spent unwisely. Then what about children's time? Many times it too is spent unwisely. Adults can choose the way they wish to spend their time, but children cannot. Plans, decisions, and ways must be made for them.

The city of Rocky Mount, North Carolina, realized this long ago. For several years the city itself has conducted its own good recreation program by providing an area in an attractive location for adults and children. So great was the interest in recreation that in 1951 the Rocky Mount Jaycees began studying the possibility of a children's zoo for the community. Soon non-Jaycees became interested and the idea evolved into tentative plans for a museum.

It seemed that the project would be too large for a single group, so the Jaycees turned the plan over to a group of interested local residents. The group contacted the public. Interest and enthusiasm increased. The public was informed of plans and objectives through a Museum Preview in May 1951, which featured eleven outstanding exhibits. Donations from individuals and organizations then provided operation and a permanent organization was established with J. W. E. Joyner as president. Then a director and temporary housing had to be considered.

By the end of 1951, a constitution and by-laws had been accepted, committees were functioning, the Junior Guild had voted $5,000 toward a permanent museum building, a director had been found and the basement of Braswell Library became temporary quarters. The Museum opened February 1952, and attracted an average of more than 40 children per day for seven months.

In November 1952, the Museum was moved to the former Sanitarium Nurses Home and support was assumed by the Community Chest. Activities, interest, and participation increased rapidly. Early in 1953 again the Junior Guild generously made available funds for the construction of the permanent Museum building in



The Children's Museum is a shady, restful retreat on a hot afternoon for grown-ups and children alike. Adjacent to the museum are a wading pool, a swimming pool, playground equipment, and a zoo.

Riverside Park which is the city's recreation area. What an ideal location! Participate in recreation and get informed on the same outing. Generous support was given by friends of the Museum and the building was completed in March 1954, and the operation transferred and the Formal Dedication and Opening Exercises were held Sunday, May 9, 1954.

It takes financial support for such a project but today the city of Rocky Mount is providing funds for the operation.

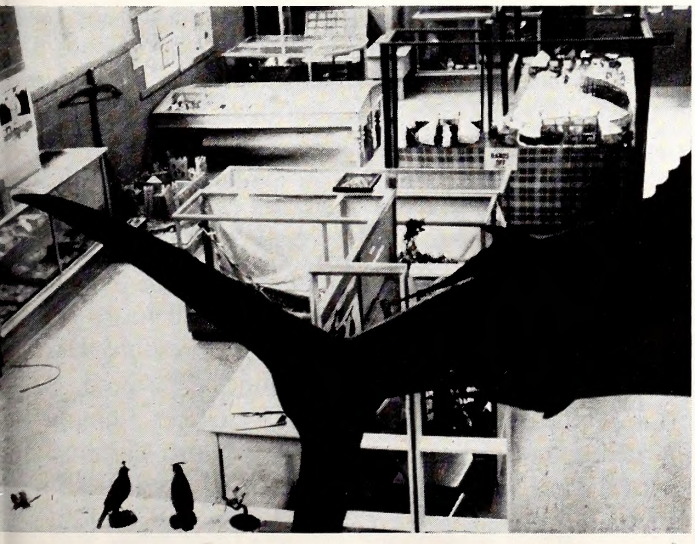
A visit to the Museum is evidence that the investment is worthwhile because of attendance and interest. The average attendance has been high—about 1000 per Sunday. Groups visiting are Bible Schools, Scouts, Rural Schools, City Schools, individuals, and families.

Mrs. A. D. Bell, director, had the following to say about a Children's Museum: "When a child's mind is channeled into creative fields, he has a multitude of wholesome outlets for the nervous energy which, if undirected, so often leads to boredom and mischief."

It is obvious that interest and cooperation made the Children's Museum possible. It is a great asset to Rocky Mount because it not only promotes interest in conservation of human and social resources, but conservation of natural resources as well. Why not try to have a similar project in your community in order to contribute something worthwhile to youth and provide a wholesome place to spend some of that 54% of time left after using 46% to earn a living. Perhaps the Juvenile Courts would have less to do, and the Judges could have time to visit the Museums, too.

Mrs. A. D. Bell, museum director, explains to a visitor that black snakes are not only harmless, but beneficial as well, because of their insect and rodent-eating activities.

A crow-eye's view of the interior of the museum, with half of a large sailfish showing in the foreground. Live and mounted birds, animals, and reptiles are on display, along with educational exhibits and many other interesting objects. Not shown is a room used for lectures, movies, and other activities for the education and entertainment of the public.



CASE

from page 7

one of the suspects. Explosives purchased the day of the blast.

With this fact to go on, the suspect was questioned as to his activities on that particular Saturday. He had, he said, spent from noon to 10:30 p.m. on Saturday at the home of a friend. The alibi fell flat, however, when the friend denied it categorically.

Another suspect questioned, another flat denial. No alibi, just a denial. On further questioning he admitted that he might have been near the fishing hole on Morgan Creek Saturday night.

It turned out that other people had been at the fishing hole, too. Repeated questioning and lectures on civic responsibility produced eye-witnesses, five of them.

Inquiry at a neighborhood store near Morgan Creek disclosed that all three suspects had been in the store shortly before the approximate time of the blast, and had returned later, one of them soaking wet. The latter reputedly described the blast, saying that one fish was blown up on the bank but got back in the water before it could be picked up. A bystander pointed out that fish ought not be to taken in that manner. The suspect is reported to have said, "you get your fish the way you want to, and I'll get mine the way I want to."

The story begins to unfold. Witnesses who were reluctant to name names, times and places began to do so, and to agree to do so in court. Long hours of tireless questioning, listening, thinking, piecing together, rechecking, were beginning to pay off. Warrants for arrest were issued. Attorneys hired, and a major court battle began to shape up. Killing fish with explosives is a serious offense in North Carolina.

Because one of the suspects could not be located, one of the warrants was not served until the morning of the trial. But there was no trial. That is why this story is written. A courtroom full of people, come to hear the trial, were disappointed. Two justifiably proud wildlife protectors were never to hear the evidence of their long days and nights and weeks of work. Eleven sworn witnesses never got a chance to testify. Why? Faced with one of the most air tight cases ever built up against fish and game law violators, the three suspects plead guilty.

Each was given a substantial fine, plus a thirty day sentence on the roads, suspended on the condition that none was to break fish or game laws for a period of two years. The prosecuting attorney remarked that if he had ever seen a case "corked up on both ends" this one was it. The attorney for the defense might have agreed.

So the case is closed. Two slender pieces of wire. A name on a supply store ledger. Law abiding citizens willing to perform their civic duty. Hours and hours of legwork and brainwork. Two proud wildlife protectors, a little disappointed because the case they built on a shred of evidence never quite came to trial.

DEER HUNTING

from page 15

stares right at me. I hardly even breathe and finally out-stare her. She decides I'm just an odd stump, eats and slowly moves on across the dry branch and up the opposite ridge. She is following the same trail as the other doe. Maybe a buck will come down the trail following these two does.

It's now 10:10 and time to take a drink from my thermos bottle. I celebrate my third hour on the stand by a major change of position and a drink of hot tea. All is very quiet except for the yellow jacket that wants to sample some tea too.

A slight breeze is moving straight toward me from the juncture of the creeks. A rustling of the leaves on the ridge right in front of me takes my mind off the yellow jacket. Now I wish the pesky insect would be silent so I can pin-point the noise on the opposite ridge. There it is again, closer. Get the gun in hand. There is a slight movement of the honeysuckle. A deer pokes its head through. My first glimpse tells me it is not a doe. It has some brush between its ears. It moves behind some honeysuckle, going toward my right. It will be an awkward shot for me. Now a fallen tree top is obscuring my view. I twist more to the right than I ever thought possible while in a sitting position. The buck is going to step into an open place, and I will have a clean shot under the trunk of a fallen tree. I line up my gun and in a moment he will be there. Oh, oh, he is going down into the branch on my right. He crosses in front of the quivering gun muzzle with just the upper half of him showing. I gently squeeze the trigger. Wham!! A jolt on my right shoulder as the 12 gauge shot gun slams back. The buck has disappeared and my ears tell me he is running down through the wet branch bottom. It's 10:23. A light blue smoke coils out of the gun barrel. I throw in another shell and listen to the departing buck going up the right hand ridge. Don't tell me, is it possible, did I miss him?

Slowly, silently, I move to my feet and edge over to where he was when I shot. No blood!! Did I miss? Did I just imagine I heard him fall? I head the way I heard him go—hoping. He must have jumped the wet branch about here. On through the rhododendron that border the creek.

About 50 yards above the creek I spot him down. I approach carefully. The gun is ready to fire the moment he moves. He doesn't seem to be even breathing. He isn't; he's down for good in the firewood he broke up. Now I count and see he has five points. Not too bad for my first buck.

With a slightly shaky voice I call Charles, he answers and after about 5 minutes arrives on the scene. I wonder why he is excited too!! Charles field dresses the buck; cuts down a sapling and we tie the buck to it. Off we go with the pole on our shoulders and arrive back at the cabin at noon.

Soon all the boys get in from their stands, and there is much talking and explaining how the pastor got his first deer.

FISHING

from page 10

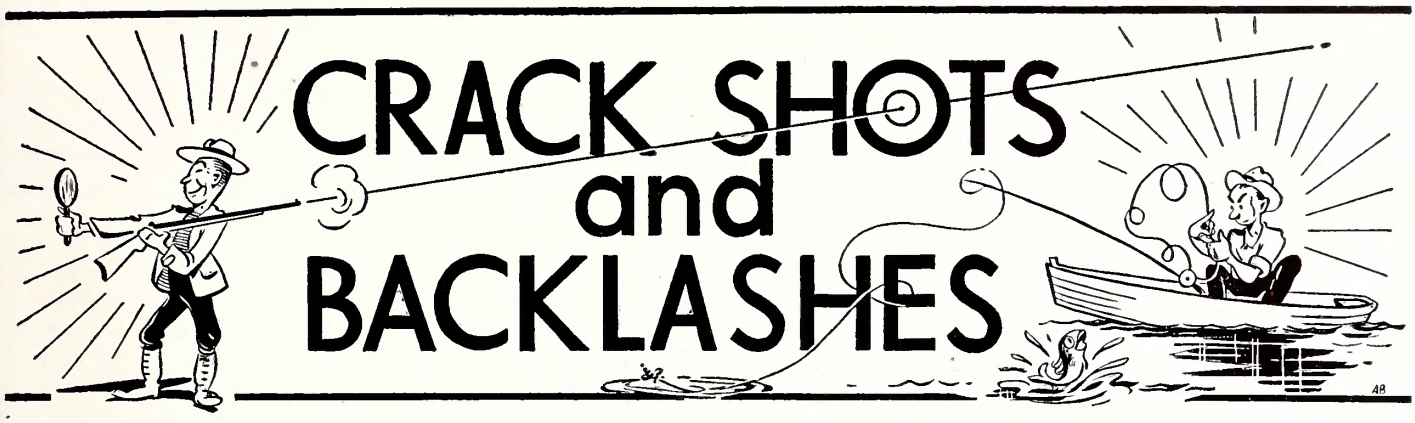
The result—a tremendous population of stunted bream accumulates, far too many for the available food, and they often eat the eggs spawned by bass. The bass seem to get fewer each year while the bream get more numerous and seem to get smaller. New stocking ratios are being formulated that may provide better farmpond fishing in the future.

In the mountain area of North Carolina, trout are by far the most important game fish. Trout are the only fish reared in Wildlife Commission hatcheries and placed in public waters as yearlings, big enough for the pan when stocked. This is called "put and take" fishing. It is necessary in western North Carolina for the following reasons. Mountain trout streams are usually very small and, as a result, have a narrow range of safe water levels during the spawning season. The scrappy trout's popularity subjects trout waters to much greater fishing pressure per acre than other waters. Food supplies in cold mountain streams are usually insufficient to support the trout populations needed to meet the fishing pressure. A combination of the above factors causes trout streams to be fished out more often than other waters. Hence, stocking is required to keep trout fishing at a satisfactory level.

Funds to support the trout program are now obtained from a special trout license, required of all persons fishing in public trout waters stocked by the Wildlife Commission. Before any trout are placed in a stream, biologists examine the stream to determine the number of trout it can support, and the kind of trout best suited to the stream. By experimental stocking, the Fish Division has shown trout stocking to be most successful when carried out intermittently during the fishing season. That is, a large part of the stocked trout are caught if they are stocked as yearlings immediately before and during the trout season, giving a higher return for each dollar invested in trout propagation.

Taking the state as a whole, the downward trend in fishing has been stopped. Modern fish programs based on fact-finding research have improved fishing greatly in some instances. Fish management is beginning to catch up with the rapid advances made by our civilization. If we have profited by our mistakes, we will examine our future planned progress in the light of its relation to the welfare of fish and other forms of wildlife. Certainly, that would be simpler and more economical than waiting until our natural resources are depleted to the point that they cannot be restored.

Your North Carolina Wildlife Resources Commission is devoted to the conservation of North Carolina's wildlife. Give it your cooperation and assistance in maintaining present achievements and keeping wildlife conservation in pace with our advancing civilization.



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

We have had so much good material from our readers that they bear the brunt of writing this issue of Crackshots. Please mention "Crackshots" in writing letters designed for that purpose. It will save us writing back to you for permission to print your stuff. And thanks a million for sending it in. Keep it coming.

This bit of warm weather reading is passed along for other readers' enjoyment:

"Dear Sirs:

When my son came home from school yesterday he had three back issues of Wildlife, April 1953, December 1951, and November 1952. We all enjoyed them thoroughly. I would like to subscribe for one year for my son and my brother.

"We have a little story we tell to everyone about a North Carolina fish we once had as a pet. We never knew for sure what kind it was but we became more attached to it than the usual goldfish in a bowl. When we were stationed at Cherry Point in '51 and '52 we lived outside the city of Havelock while waiting for housing. One day after a heavy rain the children and I were walking along the road and discovered some small fish had appeared from somewhere in the rainstorm and the children wanted one for their fishbowl. I explained that it wouldn't live, but after much persuasion caught a fish for them and put in said container. As the water was well water I felt there was probably "things" in it for the fish to eat but didn't expect it to live long as it refused crumbs, commercial fish food, etc.

"After six weeks in the bowl and still refusing food but staying alive and apparently healthy we decided to try "Spotty" on a small sliver of tuna fish. Never did a fish strike so greedily at anything. However, that was the last tuna it ate. From then on we fed Spotty every night with slivers of raw meat, small live earthworms or live flies. All of our neighbors and friends became interested and when we moved to the base housing we moved Spotty along but bought him a very large bowl, with sand and rocks at the bottom and an old piece of log to hide behind. After about nine months Spotty would swim into my hand when I changed the water and unlike gold fish he (?) seemed to enjoy a swim in the bath tub.

"He never ate off the bottom and never ate anything without "striking at it" first. One night while washing dishes and watching Spotty above the sink in his bowl (and he always swam as near anyone as possible and "peered out" at them) a small moth flew over the bowl and Spotty struck so energetically that he threw himself out of the bowl and onto the window ledge. When we were transferred to Miami, Florida, Spotty went along in a quart jar with us and was carried most of the way in my hands. He refused to eat in the smaller jar and ate nothing until we replaced him in his own large container. One day we returned from the beach and found him dead. It was like loosing a pet dog. My husband had sprayed ddt a little too vigorously and we presumed it had settled in his bowl and killed him. He was buried wrapped in tissue paper and placed in a matchbox, and to the day we left Florida every time we drove by the Motel we all said "poor Spotty."

"He stayed fat and active but never grew any longer in the 19 months he lived with us. Many said he was a bass, he had a very large mouth and "jaw," with faint stripes and a few distinct spots and a single fan tail. Incidentally, he would have died in the ditch anyway, it dried up in two days and several fish were left dead in the mud."

Maxine S. McMasters
Camp Lejeune, N. C.

Dan Briley, president of the Vance County Wildlife Club called at the WILDLIFE office recently with an urgent and justifiable complaint. The June WILDLIFE carried an article regarding lamprey eels in Kerr Reservoir. One paragraph stated that lampreys occur in the reservoir near Townsville Landing, according to reports, to the extent of "three or four on every crappie caught" to "a lamprey attached to one out of every three or four crappies caught."

Briley said that because of these reports fishing business at the landing, which is owned and operated by the Vance County Club was ruined. Further checking of reports and data indicate that lampreys have actually been rare at Townsville or any other landing. Fishermen who have avoided Townsville Landing because of lampreys are missing out on some of the finest fishing to be had anywhere.

To show that lampreys are nothing new, J. B. Pittard of Stovall, N. C. sheds further light on the matter:

Dear Sir:

I refer to a publication in Wildlife by Mr. J. H. Cornell, with reference to Lampreys in Kerr Lake.

Lampreys have been in Island Creek for over forty years. When I was just a boy about forty-five years ago they were plentiful in that stream, and some of them were of considerable size and length. Many of the natives of that area thought they were capable of rendering an electric shock to a man or horse, and for that reason they were dreaded and feared when seining

ANOTHER USE FOR DUCK BLIND

When the hot, humid days of August roll around, fishing becomes slack in many parts of North Carolina. But around the numerous duck blinds dotting Currituck Sound, good catches of bass can be made with minnows for bait. The deep water and shade at the blinds provide the fish with a welcome retreat.

for fish. Since Island Creek has a retaining dam separating its waters from those of Kerr Lake, Lampreys may be the answer to the question of what became of the fish in Island Creek.

Yours very truly,
J. B. Pittard,
Stovall, N. C.

"Dear Sir:

In the April issue of "Sports Afield" is an interesting article entitled "They've Thrown the Book Away in Ohio."

"It states that surveys in Ohio showed that less than one per cent of the hook and line fishermen caught the bag limits then in force, that most lakes and streams were underfished and most of the fish were dying of old age. So the Ohio Division of Wildlife threw away most of the 56 pages of rules and regulations and let the fishermen go out and enjoy themselves without worrying about a game warden questioning the size and number of fish caught.

"The article states that "No one was worried about over-fishing this Ohio water that can produce 300 and more pounds of fish to an acre."

"Is there a lesson here for North Carolina?

Very truly yours,
Hillman Moody"

There is probably a lesson here for North Carolina as well as most other states. Currently, biologists of the Wildlife Commission are conducting a survey of Tar Heel waters with the idea in mind of making recommendations to the Commission as to how these principles might apply. They certainly would not apply to our mountain trout fishing streams where fishing is done on a put-and-take basis, and creel limits must be observed. Trout are expensive to produce, and stocking is necessary to supplement natural production.

Instruction from Editor of PROGRESSIVE FISH CULTURIST to the Scientists of the Fish and Wildlife Service.

If you've got a thought that's happy,
Boil it down.
Make it short and crisp and snappy.
Boil it down.
When your brain its coin has minted—
Down the page your pen has sprinted—
If you want your efforts printed,
Boil it down.

Next take out each surplus letter.
Boil it down.
Fewer syllables are better.
Boil it down.
Make your meaning plain. Express it
So We'll know—not merely guess it.
Then, my friend, ere you address it,
Boil it down.

Skim it well—then skim the skimmings.
Boil it down.
Give us meat without the trimmings.
Boil it down.
When you're sure t'would be a sin to
Cut another sentence in two,
Send it on and We'll begin to
Boil it down.

FIND THE GROUSE

Somewhere in this photo a well-camouflaged ruffed grouse is incubating her clutch of five eggs. The nest was located in the Pisgah Game Preserve near Brevard.

Cleaner Rivers Mean Better Roads

"The Publishers Paper Company of Oregon City, Oregon has discovered that the sulfite liquor wastes from its pulp and paper operations on the Willamette River may prove useful as a binding agent for unsurfaced roads.

"The Willamette River is poisonously polluted from Portland upstream, principally by five paper mills which annually dump enough oxygen consuming sulfite waste into the river to equal the untreated sewage of 2.8 million people. Tests by the Oregon State Game Commission have shown that a cage of healthy wriggling salmon immersed in Portland Harbor at the mouth of the Willamette River die within a very few minutes. The discovery of the Publishers Paper mill provides another possible solution to the pulp and paper mill

wastes which compares most favorably with costs of surfacing dirt and gravel roads with oil. The cost of applying the sulfite wastes to dirt roads is from $100 to $125 a mile, as compared with $500 a mile for oil."

"Dear Sir:

I am a regular subscriber of the WILDLIFE and enjoy every word of it. I have been in constant touch with your programs for years due to the magazine. I think you are doing a splendid job in every respect. Keep up the good work.

"I have always been a believer in the cover crops for our wildlife, but until recently haven't had the chance to help out any. I have just bought a tract of land in the country and I wish to do everything I can for the wildlife protection and their welfare.

"I don't know when to ask for or when to set out or plant the bicolor lespedeza and the multiflora rose but I am definitely interested in both and to help as I can as I do have some wildlife in this area. I would also appreciate your sending me or advising me as to where I can get some posters you have distributed reading "Hunting By Permission Only."

"This program I am very interested in and wish you all the success in the world. I also am giving my whole hearted support.

Sincerely yours,
Quay L. Whittaker
Asheville, N. C."

"Dear Sir:

I understand there is no closed season on groundhogs and what I want to know, do I need a hunting license to hunt them?

This point is in much dispute here so will appreciate having you clear it up for us.

Yours truly,
Frank W. Lewis"

Under state law, persons required to have a hunting license must have such license on their persons when hunting, regardless of time of year or species. Groundhogs, crows, and other unprotected species may be hunted throughout the year, but license requirements apply.

"Dear Sir:

Will you send me, or tell me where I can obtain, complete information on hunting of deer in North Carolina? I am particularly interested in managed hunts, hunts on government reservations, etc.

"Dad and I have been getting WILDLIFE for about a year now, and enjoy it very much. We are trying to restore rabbits and game birds to our area, and have had a little success. I have established 100 yards of honeysuckle and thicket along one edge of a 4 acre woods, and it is alive with birds. We try to let the corners grow up for the rabbits, and the population is up about 100% over two years ago. Our best conservation measure to date has been the use of a .30-30 rifle and a shovel to thin out the stray dog and cat population. We hope for even better results when the 1,400 multiflora roses we have applied for are established.

"We also have a half-acre pond which the SCS is stocking with bream for us.

"Thank you for any information you can supply. I will look forward to hearing from you.

Sincerely,
Darrell Peeler
Lincolnton, N. C."

The Wildlife Commission has for free distribution two leaflets on deer. One is called "Whitetail Deer Management in North Carolina." The other is "The Western Cooperative Wildlife Management Areas."

NO LONGER FENCED OUT

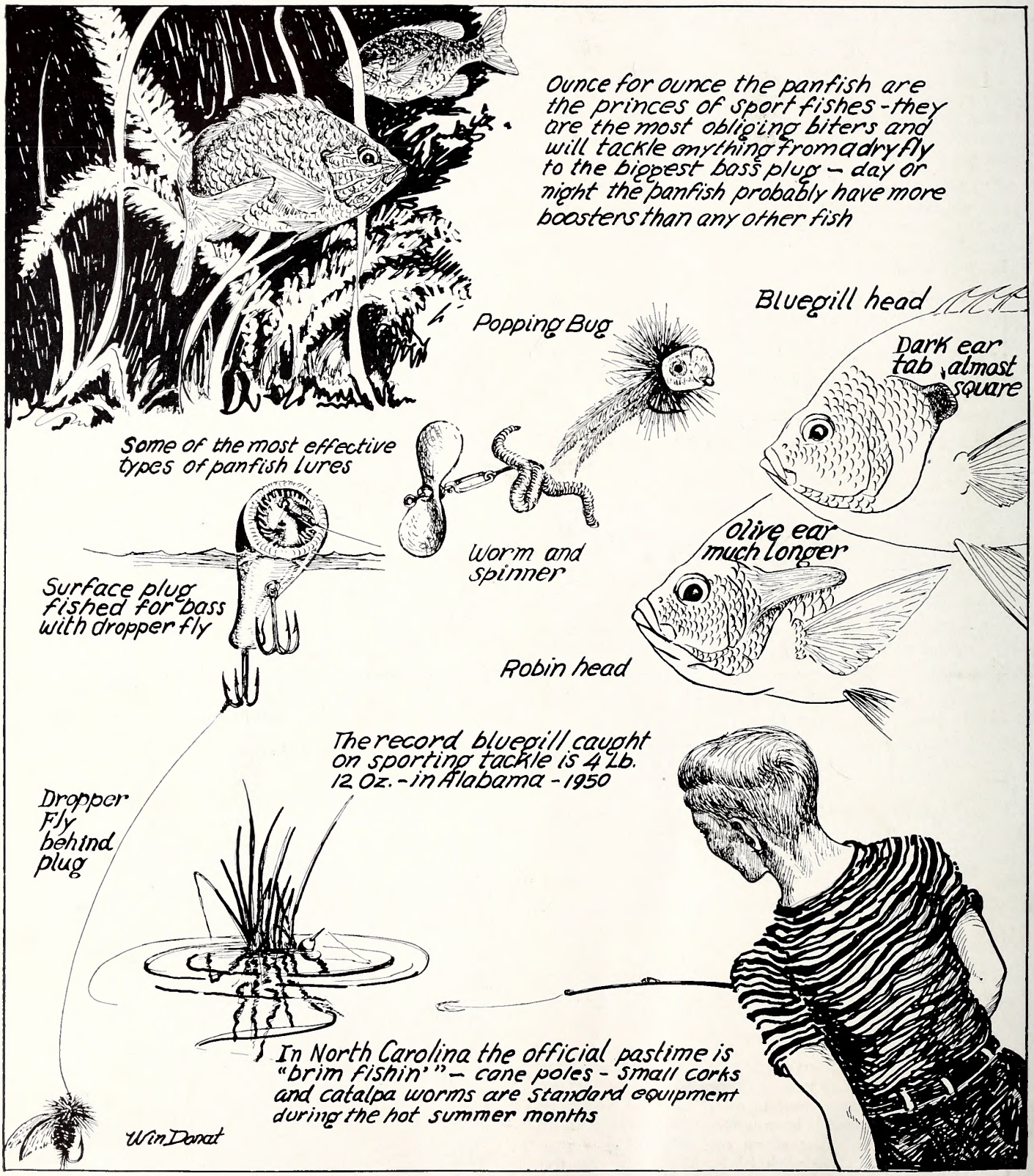
N. C. News Bureau Photo by Gus Martin

Another choice surfcasting spot on the North Carolina coast has been opened to the public as a part of the Cape Hatteras National Seashore Recreational Area. It is situated at the southern tip of Hatteras Island on a 755-acre tract owned by a private club for 23 years before purchase by the National Park Service. The weathered driftwood posts in this picture are ghosts of the fence which no longer bars visitors from the three and one-half miles of oceanfront on the former club property.

HAUL SEINE USED IN FARMPOND

Perhaps the largest seine ever to be used in a Tar Heel farmpond was used recently in Kidd Brewer's pond near Raleigh. The seine was about 175 yards long, and it took several dozen sportsmen to pull it ashore. The purposes of the haul were to see what fish were in the pond and to reduce an overpopulation of bluegills.

PANFISH ARE GENTLEMEN



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Wildlife
IN NORTH CAROLINA

TEN CENTS SEPTEMBER · 1954

Photo by Jack Dermid

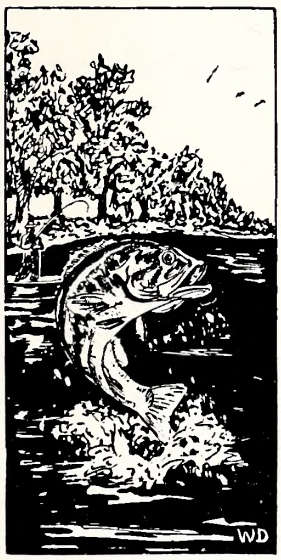
Insect Trophy

The stag beetle is well named, for the males bear huge pincers which closely resemble the antlers of a deer. It is believed the pincers are used as weapons in duels between rival suitors for the possession of a female.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina



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COVER

The walleye—rapidly becoming a major game fish in North Carolina. From an oil painting by Duane Raver.

☆ ☆ ☆

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☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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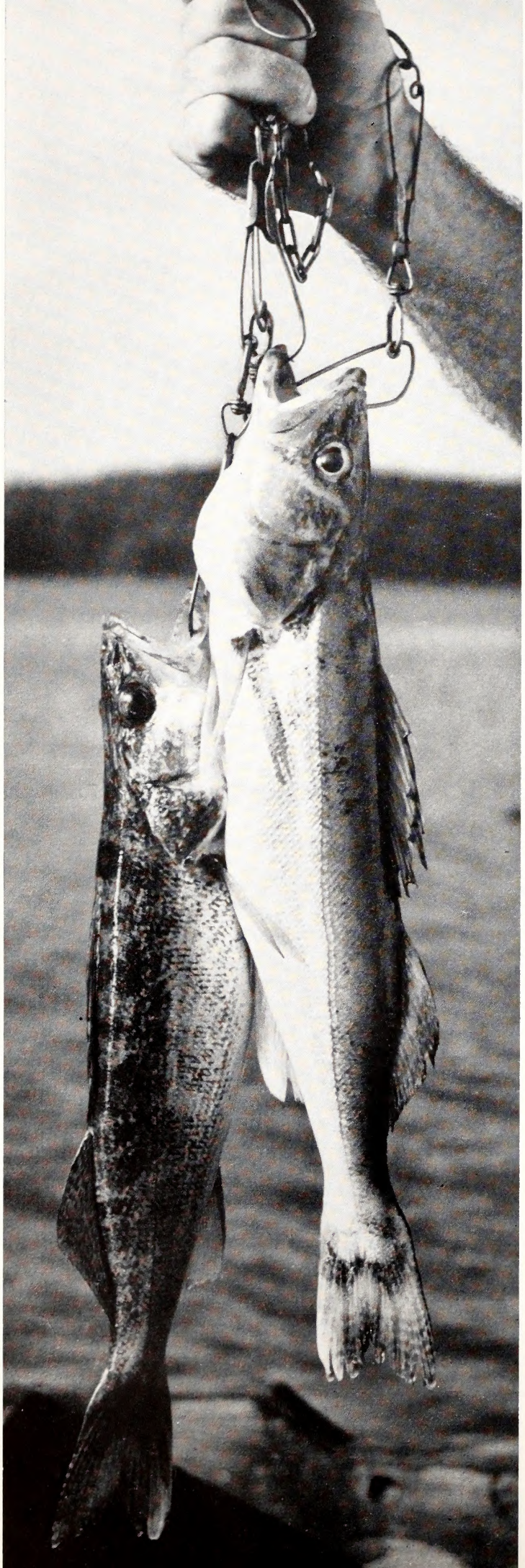


The WALLEYE

by J. H. Cornell

Photos by Jack Dermid

The walleye is rapidly becoming a more and more important game fish. Because it takes artificial lures readily and is among the finest of fresh-water fishes in flavor, it has been welcomed by sportsmen wherever it has been introduced.

The walleye has many aliases in different parts of its range. It is variously known as the yellow pike-perch, walleyed pike, pike, and jack-salmon. The scientists call this fish *Stizostedion vitreum vitreum* (Mitchill) to prevent the confusion created by the common names. The common names, referring to "pike" and "jack," would indicate that this fish is related to the pike family which includes the chain pickerel. These common names developed from the fact that the fish is relatively long and round like the members of the pike family. Actually, the walleye has no relation to the pikes at all, but is really a member of the perch group.

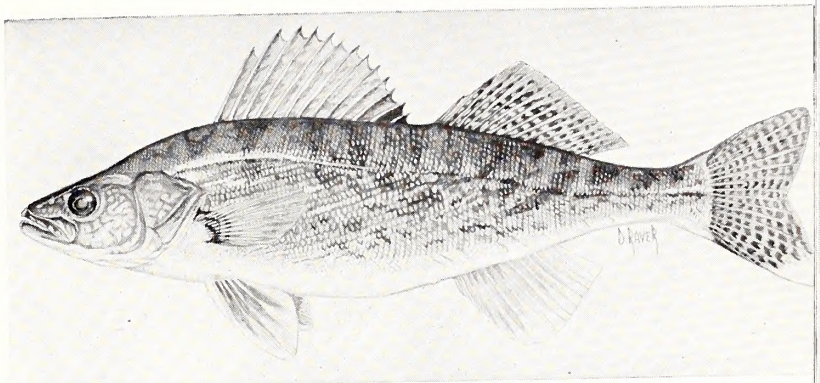
The pike family, including the muskellunge and the chain pickerel, has a single dorsal fin located far back toward the tail. The walleye has two dorsal fins which are entirely separate from each other and which is characteristic of the perch family. In addition to the general shape and the fin structure, the walleye can be further identified by a white tip on the lower lobe of the tail and a dark blotch on the membranes between the last three dorsal spines. Also, when you have caught your first walleye and are about to take the hook out of his mouth, it is well to remember that he has a very adequate set of canine teeth. The present size record of this species is in the vicinity of 25 pounds, although the average is less than 5 pounds.

Habitat

The walleye is indigenous to the cool, clear waters of the upper Mississippi valley and south-central Canada. It is native to the tributaries of the Mississippi River where suitable habitat conditions exist. Because of its desirability as a game fish, it has been introduced in many waters beyond its original range, and is now found from Hudson Bay to Georgia and in many waters of the Atlantic Coast drainage.

The walleye seems to prefer moderately deep, cool, clear lakes or rivers, which have rocky shorelines and gravel bottoms. Turbid waters and high summer temperatures seem to prevent the successful introduction

The author brings us up-to-date on the characteristics, life history, management recommendations, and the latest angling tips for North Carolina's new game fish.



The walleye can be identified by the white tip on the lower lobe of the tail, the two separate dorsal fins, and the dark blotch on the membranes between the last three dorsal spines.

of the species, although, considering its original range, it has proved to be very adaptable to changed environments.

Life History

A wide variety of spawning grounds are used by the walleye, depending to some extent upon what is available in any given habitat. This species does not build a nest. The eggs are laid free among the rocks and boulders and settle to the bottom. There, they are fertilized by the males. Among the rocks they are prevented from being washed away by the current, yet are provided with fresh oxygenated water. Other species, such as the sunfish, provide a flow of fresh water over the eggs by fanning the nest with their fins; but the walleye depends on nature to provide water movement.

Preferred spawning sites, then, usually are at the point where a clear river flows into a lake over a rocky bottom, or along a rocky lake shore where there is sufficient wave action to keep the eggs agitated.

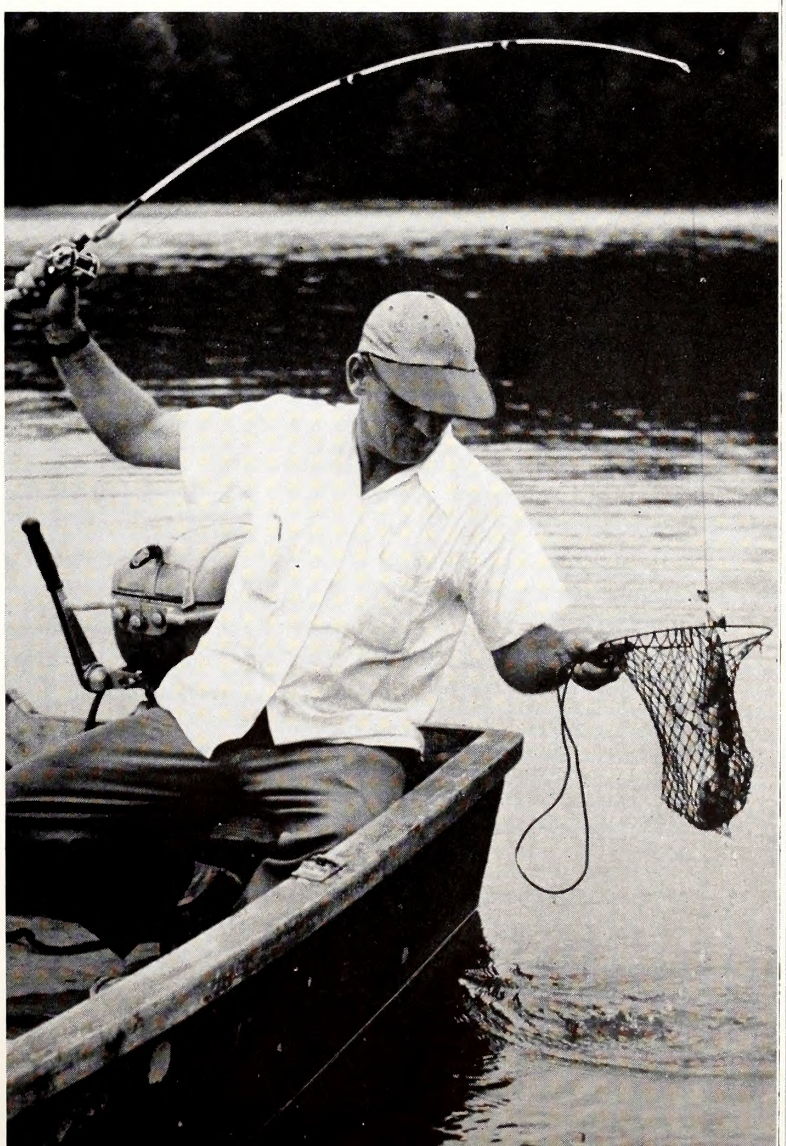
In the large, north-central walleye lakes, spring spawning migrations move up into the mouth of tributary streams. In lakes which have no suitable tributaries, they find a less suitable spawning site along the rocky shores if the lake is large enough to provide considerable, consistent wave action. After the eggs are laid and fertilized, the spawning fish return to their usual haunts and leave the survival of the young very much to chance.

As with all other fishes, the spawning season of the walleye is determined by water temperatures and not by the calendar or the phase of the moon. When a suitable habitat exists, the eggs will be laid at a depth of about three to eight feet shortly after the water temperature reaches 40 degrees F. The peak of the spawning season usually lasts about two weeks, although there may be some activity over a slightly longer period.

The walleye fry first feed on microscopic plant and animal life for a few weeks, but they soon begin to supplement this diet with the tiny fry of other fishes, or even their own brothers and sisters. Walleye fry of less than 1½ inches have been observed taking other walleye fry of almost the same size. The walleye is extremely voracious, and its growth rate depends for the most part on the quantity of food available, the water temperature, and the length of the growing season. No "standard" rate of growth can be described.

In northern United States and Canada, walleyes rarely reach a length of 6 inches at the end of their first year, and may be three or four years old before they reach a spawning size of 17 inches. As far south as Tennessee and North Carolina, where the period of suitable temperatures is longer, they may exceed 10 inches at the end of the first year and be mature by the end of the second year of life. Adult walleyes eat almost anything that

Although not a surface-striker or an aerial battler, the walleye is a hard, determined fighter, and provides real sport on reasonably light tackle.



Sketch by Duane Raver

In deep water, deep-running plugs with good action at slow speeds are effective for walleyes.

moves. They are particularly partial to young yellow perch and trout, but minnows, gizzard shad, or any small fish are acceptable. They are not above eating frogs, salamanders, and large insects when large numbers are present.

When you go fishing for walleyes, remember that the fish did not get its name by accident. The eye is very large in comparison to the eyes of other fishes, and, consequently, must have great light-gathering capacity. Most of the feeding of adult walleyes is confined to the hours of twilight or darkness, although they may feed in relatively, shallow water on cloudy days. Whether or not the size of the eye is actually the cause, there is no doubt that walleyes prefer to feed in conditions of twilight. During midday, they usually are found in deeper, shadowy waters among the rocks and reefs.

Management

One of the first reports of walleyes in North Carolina was in 1869 from the French Broad River. This is to be expected since the French Broad is a tributary to the Mississippi River system which is the native habitat of the species. Siltation and pollution have rendered much of the former habitat unsuitable for this species, but it has been transplanted into many other waters. The large storage reservoirs for electric power, which have been built in the mountain regions, have provided excellent conditions for the species in recent years. They do well in such reservoirs where the in-flowing stream is not contaminated by pollution, and where the spawning grounds are free from silt which would suffocate the eggs.

In these circumstances, they provide a desirable additional game species because they utilize an otherwise unoccupied portion of the habitat, provide additional predation upon the usually abundant forage fish populations, and supply a desirable game fish whose spawning is not adversely affected by the changing water levels incident to power production.

In the selection of lakes for the introduction of walleyes, it must be recalled that they will tend to prey seriously on trout populations in those lakes suitable for trout. At the other extreme, its successful introduction is limited by high summer temperatures, siltation, and pollution. The walleye is not a cure-all for the problems of unsatisfactory fishing in all parts of the State. Its range is limited by its requirements for reproduction and survival, and its predatory tendencies make large bodies of water a necessity.

Importance

For the angler who insists on a fish that slashes surface plugs and jumps repeatedly, the walleye is a disappointment. He rarely takes a top-water lure, and practically never leaves the water in spectacular leaps. On the other hand, the walleye strikes hard, is a dogged fighter, and gives a good account of himself on reasonably light tackle.

From mid-June until early October, walleyes go deep and feed almost exclusively during the late afternoon and at night. Best catches are made in water from 10 to 50 feet deep, depending on temperatures, all during the summer. This creates a problem in presenting artificial lures, unless the angler is still-fishing or trolling. Live bait, in the form of minnows, large earth worms, or salamanders, is good for walleyes at any time of the year.

Standard bass casting tackle is customarily used for walleye fishing. However, in all but deep trolling, spinning tackle is satisfactory when the fish are in shallow water, the flyrod is very effective when streamers or small metal lures are used. In any walleye fishing, it is particularly important that the retrieving or trolling be done very slowly. They seldom will pursue a fast-moving lure.

Spinners and spoons trailed by streamers, pork rind, worms, or minnows probably constitute the most used trolling lures. In deep water, plugs, such as the Go-Deeper River Runt, the Mirro Lures, and small Daredevils, are effective. In shallow water, the Lazy Ike, or Flat Fish, are particularly good because of the violent action possible with a slow retrieve.

Rocky reefs, bars, and ledges are preferred locations during the late afternoon and at night. It is necessary to experiment with various depths; and in hot weather, be sure to try the real deep holes. When you catch one, remember that they usually travel in large schools. It is a good idea to fish in that vicinity quite thoroughly.

After your walleye is caught, be careful not to let it spoil in the sun. It has an especially delicate flavor and is rated by many above bluegills and crappies as a table delicacy. You should skin the walleye and fillet out the pure white meat. You will agree that it is indeed an important addition to the list of game fishes available.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

1954 Dove Season Set by Fish and Wildlife Service

Acting on a recommendation by the Wildlife Resources Commission the U. S. Fish and Wildlife Service has set up the 20-half-day shooting seasons for doves in North Carolina this year. The first half of the season gets under way September 10 and runs through September 29, and the second comes up December 10 through December 29. The longer shooting periods, according to Wildlife Commission game experts, will make possible the bracketing of the main part of the migratory flights, especially in the fall session. Bag limits are the same as last year, eight birds daily, eight in possession. Shooting hours are from noon to sunset. As in recent years it is expected that the early season will yield the most birds since the doves will be concentrated near grain fields and watering places.

* * * *

Duck Season Proposal Comes in for Criticism

Duck hunters, conservationists, sports writers and other interested parties have recently expressed considerable concern over a proposal by the Fish and Wildlife Service to allow a bag and possession limit of eight and sixteen ducks in and north of New Jersey, and only four and eight birds in the rest of the Atlantic flyway. The 8-16 limit has a proviso that half of the birds be scaup (bluebills). Tar Heel sportsmen contend that scaup are as numerous in local coastal sounds as they are in the New England States, and therefore the allowable limit on ducks ought to be uniform throughout the Atlantic flyway. At press time a final decision had not been announced.

* * * *

Managed Hunt Regulations Changed

Concurrent opening of the season on deer in all of Western N. C. plus expanded facilities and other factors this year will remove the necessity for advance applications, public drawings, and other procedures which have made conducting managed hunts intricate and complicated. It is doubtful that any area will have more hunters than quotas will allow except perhaps on opening day. All checking stations will be connected by a network of telephone and two-way radio communication so that an overflow of hunters at any area can be directed to points where quotas have not been filled. The new system will allow hunters to exchange their hunting licenses for permit tickets which will redeem the licenses at the end of the hunt. There will be wilderness area hunts again this year.

The threat of salt water contamination of Currituck Sound was halted by the erection of this snow fence to stop erosion of the protecting outer bank sand hills.

The ENGINEERING DIVISION Reports

Everyone likes to read a story of progress or success, with the spotlight of attention playing on the party or parties credited with the major contribution. Frequently there is a story within the story, of people who labor unselfishly and unglamorously to make the project successful. These are the people or organizations who are usually unnoticed because of the seemingly minor nature of their contribution. It's a sort of headline reading that causes us to be unaware of events behind the scene.

One division of the North Carolina Wildlife Resources Commission functions largely to make the efforts of the other divisions more successful, in a continuing program of wildlife conservation. We refer, of course, to the Engineering Division. Employing the smallest number of permanent employees of any division of the Commission, the division's entire staff is composed of a division chief, a heavy equipment operator-foreman, and a stenographer.

One of the primary responsibilities of the division is maintenance of buildings, equipment, and other facilities of fish hatcheries and game refuges throughout the state. A glance at the size of the state and the amount of Commission-owned property is enough to make anyone wonder just how three people can even begin to cope with the job. And the fact that they do the job well is even more amazing.

The division also constructs new buildings and facilities, working in cooperation with other divisions to complete such construction and development projects as are necessary for the advancement of the Commission's programs. And occasionally it develops a project independently of all other divisions. As indicated previously, it's a big job—statewide in scope and equally diverse in nature. In a sample week, occurring a short time ago, the division chief traveled over 1,000 miles by car, boat, and plane, supervising work on existing projects and making inspections and work estimates on proposed projects.

The division's property inventory shows the following items: heavy equipment—one bulldozer; two tractors; a bulldozer attachment, a front loader attachment, and a ten-yard earth-moving attachment for the tractors; one one-half yard combination shovel-dragline; one tractor-trailer combination for moving equipment. Light equipment—three dump trucks, and a wide variety of hand tools for excavation and construction. This type of equipment is calculated to be the most profitable to the Wildlife Commission. It is capable of doing most work incidental to wildlife conservation, and it can be moved from place to place as the need arises.

Not all the Commission's projects are constructed by the Engineering Division. Projects which would demand

When a hatchery needs a new pond, or a cleaning job on an old pond, the Engineering Division moves in with equipment that can do the job.

the full-time attention of the staff are usually contracted to the lowest bidder. Jobs are also contracted when large expenditures are involved. Of course, the occasion arises when the cost of moving the Commission's equipment is greater than the cost of completing a project. If the equipment cannot be used profitably, the job is contracted. When it does not do the construction, the Engineering Division develops plans and specifications and acts in a supervisory capacity to see that all specifications are met.

The widespread area of work necessitates hiring temporary labor in the vicinity of the particular construction. Aside from being the most economical arrangement, this policy gives employment to people in many different parts of the state. If local people are employed, the community has a tendency to take more pride in the project and have a better understanding of the aims and purposes of the Commission.

The numerous facilities, properties, and installations of the Wildlife Commission require constant improvement and maintenance for maximum operating efficiency.

The State of North Carolina is a large work area, but here's a division of the Wildlife Resources Commission that does construction and repair from Manteo to Murphy.

By LUTHER PARTIN

This is the sort of thing you see when the Wildlife Commission opens up a new access area for North Carolina's sportsmen.

Much of the work carried on by the Engineering Division is financed from a special fund, consisting of fifty cents set aside from the sale of each statewide hunting and fishing license. This fund is set aside for the purpose of acquiring and developing new lands and waters. Some of the work is partially financed by Federal Aid funds. Money is made available by the federal government for use by the separate states in fish and game restoration and management programs. Construction plans for projects using federal funds are approved by the U. S. Fish and Wildlife Service Regional engineer. The construction is carried out under the supervision of the Wildlife Commission's Engineering Division, with periodic inspection by the personnel of the U. S. Fish and Wildlife Service.

Let's take a look at some of the things the Engineering Division has been doing to aid the cause of wildlife conservation in North Carolina. Late in 1951, it became evident that action was necessary to save the waters of Currituck Sound for sportsmen. Waves of the Atlantic Ocean had eroded the sand hills of the outer banks to the danger point. The danger of salt water washing over the sand hills into the sound in large amounts was eminent. The effects upon the fabulous fresh-water fishing and waterfowl center would be disastrous. The Wildlife Commission decided to try a type of fence used in northern states as a snow fence to pile up snow drifts. If it would have the same effect with sand, the problem could be solved. The Engineering Division erected about two miles of the sand fence in the eroded area. Sand soon began to pile up around the fence. Today, the fence is completely buried under a hill of sand. The immediate threat of salt water contamination of Currituck Sound has been removed, and efforts are underway to get a suitable variety of grass

•——————————See REPORT page 15

• One man's humorous opinions about fishing the way the experts tell you to do it.

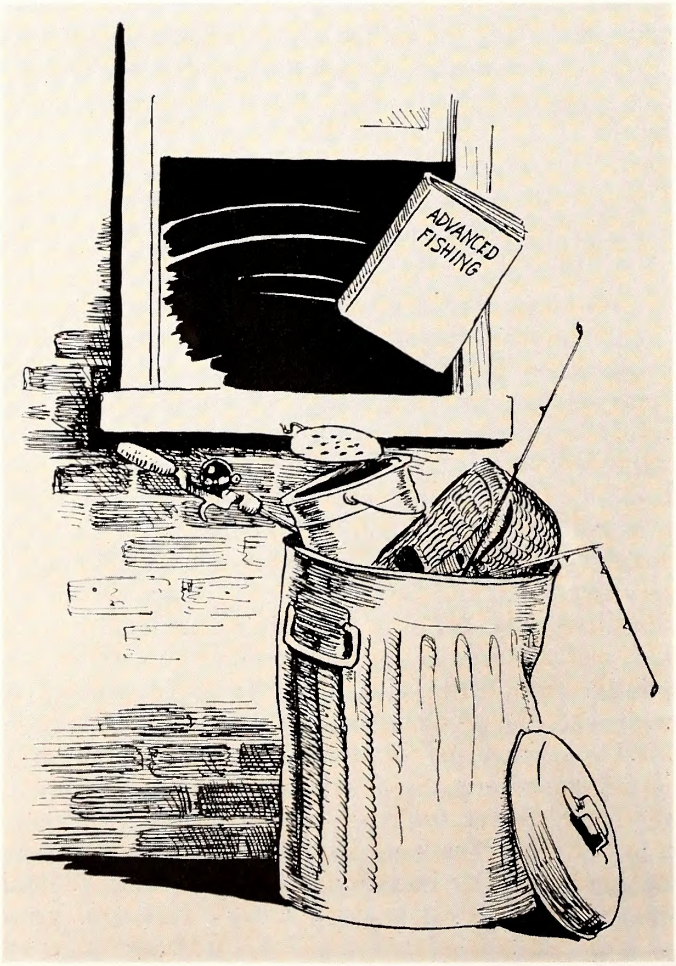
Not According to Hoyle

by Robert K. Brookes

Reprinted from "New Jersey Outdoors"

During the past several years it has been my pleasure to read numerous articles and books on the "How To Do It" aspect of fishing. Every book that came off the presses found its way into my home. I could not get enough of the information that was presented within these wonderful volumes. What lures to use, when to use them; the words on these subjects were set down by experts, fishing was their "baby" and they knew what they wrote. As a result, my conclusions were: "follow the advice of these men and be rewarded with a heavy creel." There it was in black and white, the rules for successful fishing. Prior to absorbing this vast store of knowledge, I did my fishing with a length of string and an old cane pole. I grew older, the desire grew stronger to be a really good fisherman, and in an attempt to pacify this desire I read the words of the experts.

Being one of the faithful, I armed myself with the smallest of plugs, the lightest of lines, and a long, limber rod and set forth in quest of bass. By the same token



I obtained the smallest, sparsely tied flies, the best of tapered lines and leaders, plus an extra-light rod, and crawling on my hands and knees, so as not to put the fish down, began to stalk the wary trout.

What was the ultimate result? I made hundreds of casts—day in and day out, my arm grew tired and weary and my creel remained empty. Oh, I managed to hit a bruiser now and then of say, perhaps eight or nine inches, and an occasional stray panfish—but no lunkers. As for *Salvelinus fontinalis*—well, my crawling wore out a pair of waders—at the knees—and about all I got for my pains was my head covered with burrs. To say the least, I was beginning to be slightly discouraged, and in the words of Ed Zern, was ready to say "To Hell With Fishing." Then came the light.

The light was in the form of an old codger whom I met one miserable rainy day while fishing the swampy section of the Mulhockaway Creek. This old gent was dripping water and smiles as he showed me five of the nicest trout these eyes have seen outside of a hatchery. His secret? "Simple son, all you do is get in the hole with them, toss in a big nite crawler and you're in business." To prove his point he waded in and bang he was fast to another fish. That was the clincher, I threw caution to the winds; and I caught fish! The Gods of Fortune smiled and I was happy. The end was not achieved according to Hoyle, but it was legal and it did produce trout. For example:

My wife and I took a trip to the Pequest River up in Warren County one fine spring day, with trout in mind. We fished down stream with my wife in the lead. She doesn't read the fishing books so she slopped along gazing at the birds and bees, and occasionally making a sloppy cast with a poor, drowned dry fly. Then it happened. She let out a yell and I saw that she was fast to the largest rainbow that ever swam the Pequest. Maybe the hatchery men had planted the fish I don't know, but there he was on the end of my wife's line. It was an even battle, the fish determined to stay where he was and my wife determined to "horse" him in. Something had to give—and it was of all things the hook that finally straightened out. She didn't land that fish, but then he wasn't hooked the way the experts say you should do it.

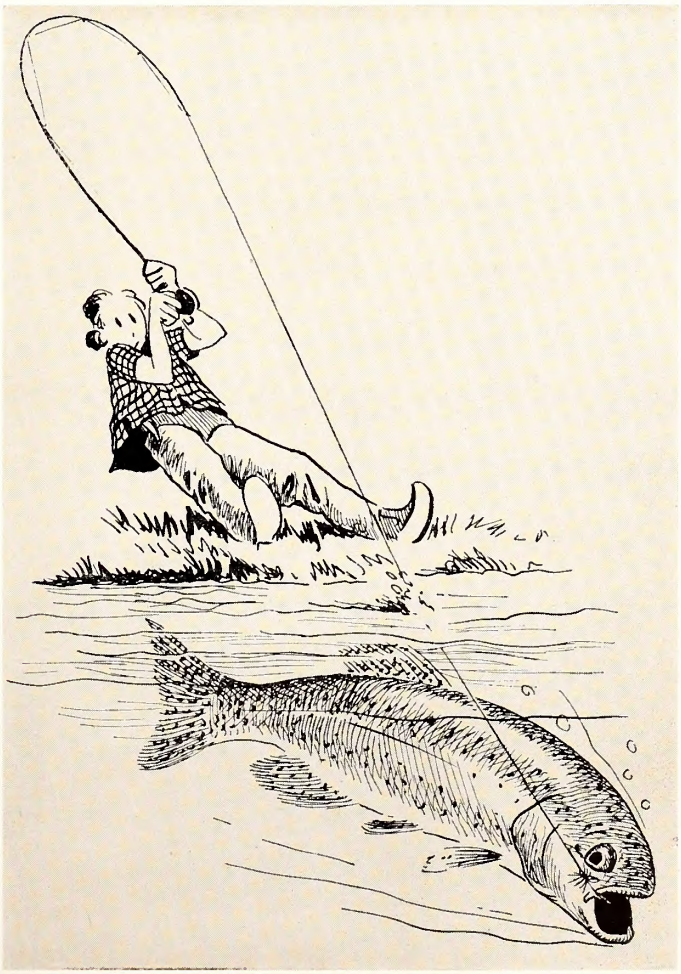
I have in my possession a monstrosity that serves as a surface plug. It is a huge thing with propellers that would do justice to an outboard motor, fore and aft. Bass love it. The harder and sloppier I lay it down the

more action I get. Possibly the bass which inhabit the waters I fish haven't got around to reading the latest dope that claims tiny plugs are their favorites. Possibly these are old fashioned bass who are not prone to accepting modern methods. I don't know what the answer is, but I do know I catch fish with my monstrosity, fished in my unorthodox way. When I fish these same waters the way the experts advise, I catch nothing but sunburn and flies.

Once, while fishing a slow moving North Jersey stream late in the season, I came upon a deep hole that held several trout. I suppose they had ganged up there to escape the heat, as a small cold spring trickled into it. The water was deep and clear, and as I approached, the trout spotted me and went like mad around the pool. Finally they calmed down. What would the experts do in a case like this? I recalled some advice I had read somewhere that claimed if one stayed hidden and lightly dapped a dry fly on the surface, results would be forthcoming very shortly. I tried this with no results. Next, I called on another trick, that of soaking a wet fly so it would sink. I retrieved it in a bewitching manner. Again, no results. Finally in disgust I stood up and fixed to my leader a large double bladed spinner. Then in full view of those fish I threw in the hardware and landed seven trout. Of course they were stupid trout who hadn't read the rules—but they were trout. Any smart trout would have known that the thing to hit was a dry fly or maybe the wet fly.

Last July, as you probably recall, it was very hot and humid. On one of these hot days a friend and I foolishly set off in quest of bass. The sun was unbearable and the boat seat was a hot as Mom's oven on Thanksgiving morning. We were soaked with perspiration. Our tongues hung out like a hound dog who had just run a rabbit five miles. The experts wouldn't fish on a day like this; they would have waited till the sun went down, and I was willing to agree with them. As we approached a weed bed, I dropped my surface plug on the edge and sat watching it. There was a slight swirl and the plug disappeared. I set the hooks and the fish made a short run into the weeds. Then he wouldn't budge. We rowed over to find the line tangled in weeds. I pulled it up hand over hand. No struggle, just the dead weight of fish and weeds. After getting the mess into the boat I pulled away the weeds and there lay my biggest bass to date, all 6 and ¼ pounds of him. This fish was taken about one o'clock on a very hot afternoon, at a time of day when the book says to stay home. According to Hoyle, self-respecting fish shouldn't hit a plug on a broiling July afternoon just past high noon. I guess this fish never got around to reading the rules.

And so it goes, follow the book and nine times out of ten you wind up fishless. Perhaps this only applies to me, or maybe I fish waters that receive the more dull minded fish that the men from Hackettstown release, I don't know. But I do know that I now enjoy fishing since I threw off the shackles of the experts. Incidentally, do you know someone interested in some slightly used ultra modern light plugs and a room full of "How To Do It" books?



With modern fiber glass bows and aluminum arrows, two Cherokee Indians, Isaac Welch and Boyd Catolster demonstrate classic archery form. As in other shooting competitions, safety is the cardinal rule of archery. A game arrow can pin a deer to a tree.

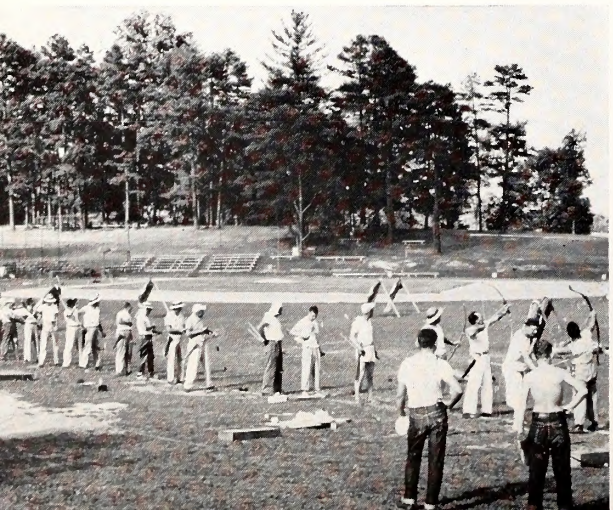
Clad in shirts and shorts, the ladies step [illegible] go a flight of arrows. Note bolt leaving t[illegible] Jordan, No. 32.

A GROW[illegible]

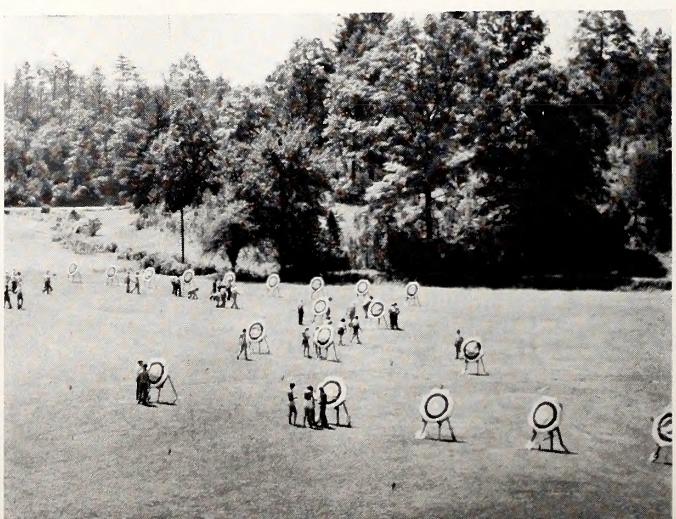
By R[illegible]

One of the oldest and most fascir[illegible] increasingly popular with Tar H[illegible] of the two-day tourney of the [illegible] Brevard last July. Archers, men a[illegible] in common — sportsmanship, in [illegible] with the sanction of the Wildlife [illegible] lature to make bow and arrow h[illegible]

At the referee's whistle shooters step to the line and shoot in turn, three men to the target. Note improvised burnooses several shooters are wearing.

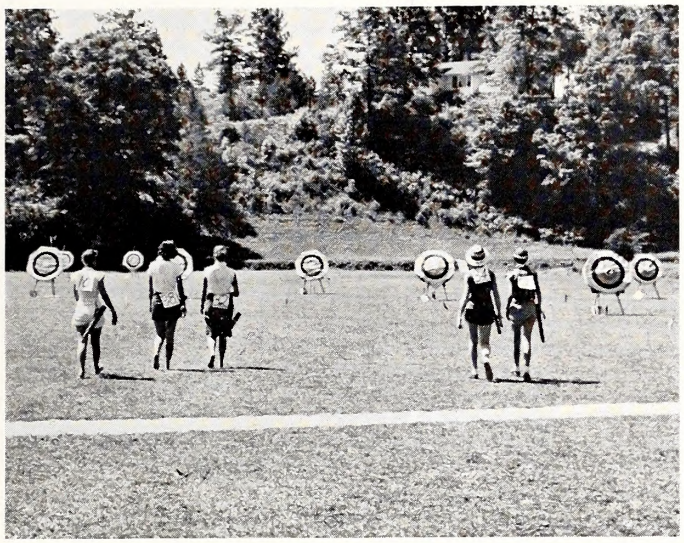


At a distance, targets look small even to the camera's eye. Experts score bullseyes at amazing distances.



These [illegible] force [illegible] kill g[illegible]

e to let
rs. Jake



It is a long walk through the broiling sun to retrieve arrows, but the girls kept it up gamely for two days. These targets were eighty yards from the shooting line.

Mrs. William Schmidt of Brevard and Florida marks scores while Mrs. Jordan, center, and Mrs. H. L. Puckett, both of Charlotte, count the tally. Archers use uniform targets and scoring rules.

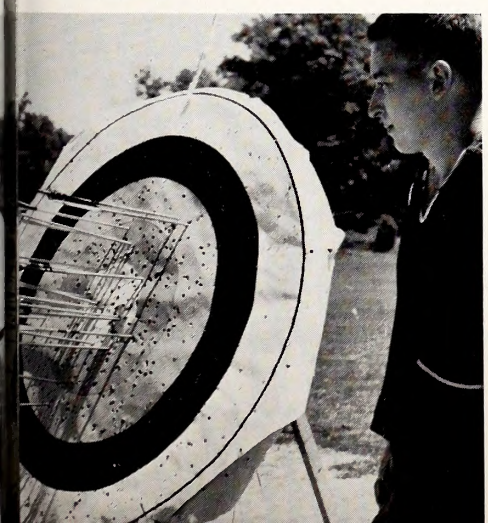
G SPORT

IDSON

in the world, archery is becoming
enes here show part of the activity
n Archery Association held near
ike, seem to have one characteristic
se of the word. Tar Heel archers,
n, are going to ask the 1955 Legis-
for certain types of game

Toughest competition in a tournament is the clout shoot. A stake with a flag is surrounded by rings of lime on the ground, hundreds of feet from the shooting line. O. K. Smathers, past president of the association and a champion archer, scores points as shooters identify their arrows.

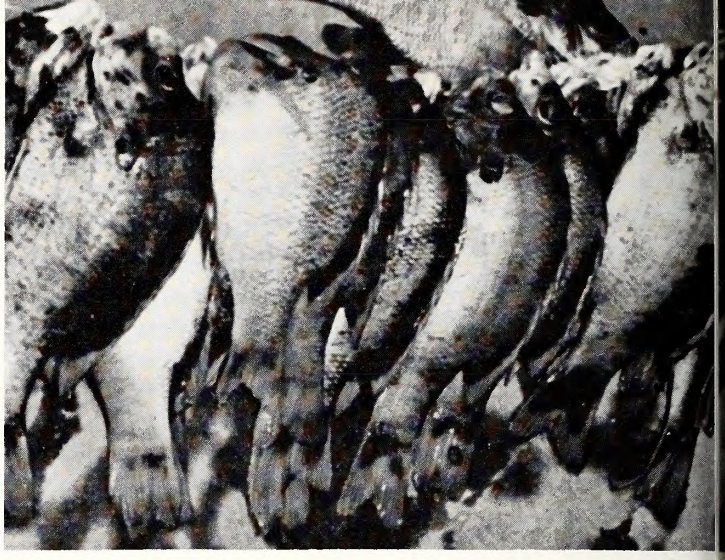
dramatically the flat trajectory and terrific
ney hit the target, proof that arrows would
few cripples.



How to Clean SMALL FISH

by Luther Partin

Unless you're a lot luckier than most fishermen, you catch small ones more often than you like to admit.

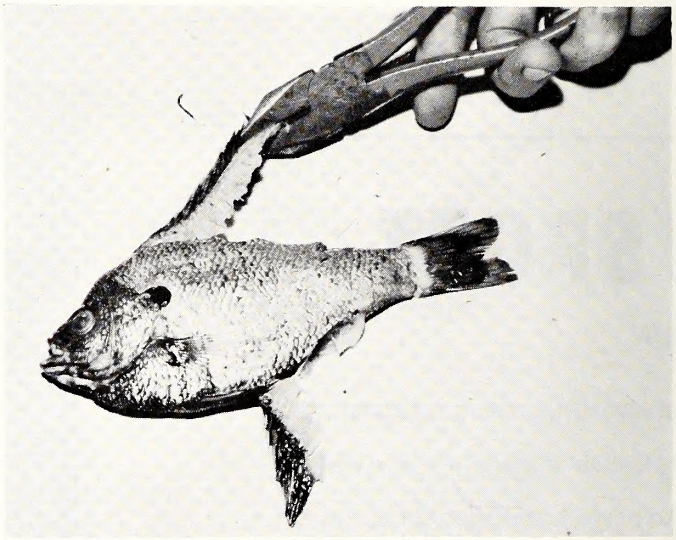


It's a world of fun catching a string of bream like this. Even if they're not very big, they're good eating and not as hard to clean as you think.

Let's face it fellow fishermen. A lot of our fishing trips result in a string of little fellows that we carry home just to show the neighbors and friends. And that's about as far as we utilize them, besides throwing them in the garbage can or giving them to the cat. When we stop to think what it cost to produce the little fellows in a farmpond, or how many big fish could have been produced with the food that the small ones ate, it seems very wasteful not to use them as food.

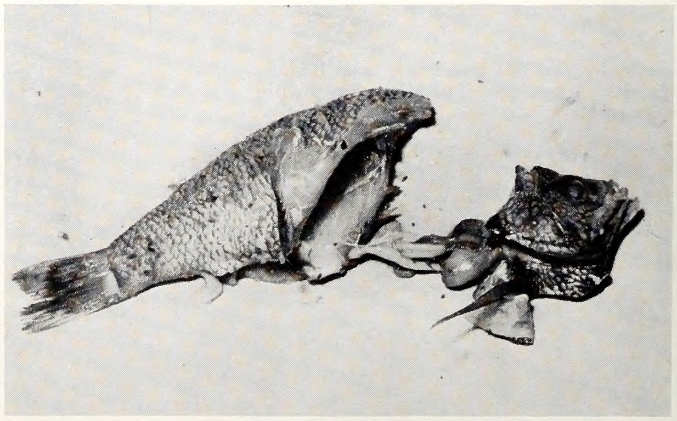
Most biologists will go along with us when we don't throw small panfish back. The current theory among fish experts being that there are too many small fish in most of our ponds, lakes, and streams anyway. Removing some of the crowd makes food conditions better for the ones that are left. So there's no need to worry about catching too many, in fact, the case is usually just the opposite. The reproductive capacity of fish, especially bream and crappie, puts even the mathematics-minded rabbit to shame.

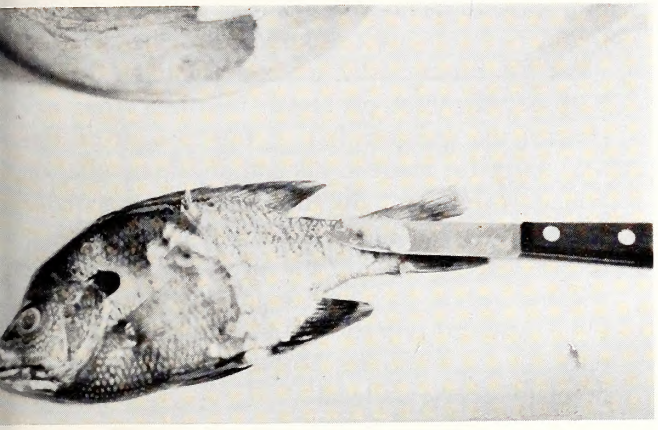
After catching a mess of little panfish, the people who don't eat them usually refrain from doing so because they think it's too much of a bad job to clean them. But that's not necessarily so, and they're really missing a culinary treat. People who enjoy eating fish usually prefer the flavor and texture of small fish to eating large fish. As far as the cleaning of small fish is concerned, experienced fishermen make short work of it. While it is often impractical to fillet small fish, the bones that place you in danger of social ostracism can be easily removed during the cleaning process. Only the backbone and the ribs are left in the fish, and they can be dispatched with a thrust of the fork while eating. The removal of the scales, head, entrails, fins, and tail, if you wish, is quite simple when the fisherman's method is used. Take a look at the accompanying illustrations and try the technique yourself the next time the big ones get away. Fishing pleasure is at its peak when the sport is transported from the water to the frying pan to the human body with equal skill.



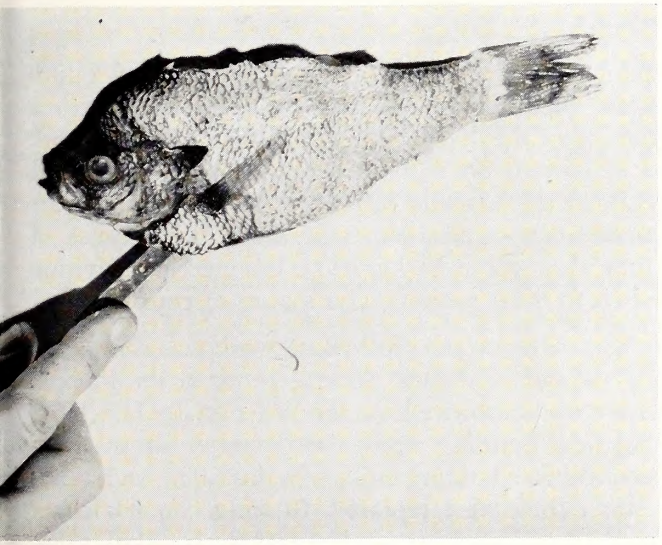
It's easy to remove the large anal and dorsal fins. Just cut along both sides of the fins, then pull them out with your fingers or a pair of pliers.

Cut completely around the head, leaving the pectoral bone and pectoral fins on the head. Twist the head to the side and downward. This will snap the backbone and the head, gills, pectoral bone and fins, and all internal organs can be removed at one time. Clip off the two remaining fins, and the tail if you like.



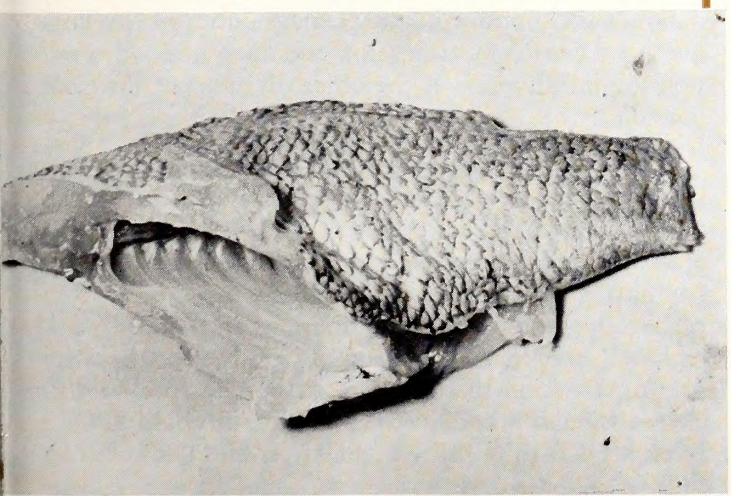


leaning time can be cut in half by dipping the fish in a ucket of hot water (about 180 degrees Fahrenheit is OK). he hot water makes fish-scaling as easy as peeling a banana.



Now, cut the fish open. From the point where the anal fin vas removed to the V-shaped pectoral bone of the breast.

The finished product—total time less than two minutes. Give t a coat of batter and fry in hot grease. You've got an easy-to-eat dish that's unsurpassed for eating enjoyment.



REPORT

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established on the sand hills that will prevent further erosion.

A recent major project has been the development of the Orton Waterfowl Refuge for the Game Division's game research program. The project was such that Commission equipment could take care of all phases of the work. The heavy equipment operator-foreman and temporary workers handled the work, under the supervision of the division chief. Construction details included building tool and machinery storage sheds, dams, spillways, and gates for controlling water levels.

Objectives of this project are to provide better food conditions and protection to wintering waterfowl in southeastern North Carolina. The Engineering Division restored over 625 acres of marsh and swamp. The gates and other facilities for controlling water levels permit drawing the water down in summer for planting and growth of waterfowl food plants. When flooded again, this food is available to waterfowl. It is hoped that these good living conditions will attract a larger wintering population of waterfowl in this section, with the accompanying result of even better waterfowl hunting for Tar Heel sportsmen.

To meet the need for housing animals during field trials, the division constructed a dog kennel on the Caswell Land Use Area, during the 1952-53 period. This area is the scene of competitive field trials for fox hounds each year. The following year, a stable was added to house horses used by the judges in the trials. A show building for showing dogs, and a driveway completed the project. The work was done by local carpenters, under the supervision of the division chief, with grading and excavating by the Commission's heavy equipment.

During this same period, a boundary survey was completed that must have been rough on footwear and worse on feet. Involved was the running of about 267 miles of property line encompassed by the Sandhills Wildlife Area. Division personnel did the job, installing a marker at each corner of the area, and making a map of the entire area included in the boundary.

The Engineering Division is at present constructing a new nursery near Chapel Hill for use in the Game Restoration Program. The new facilities will be more centrally located, and the 185 acres of fertile soil can be irrigated. The nursery will be used not only for production of habitat improvement plants, but in the development and testing of new plants, as well. By far, larger quantities of food and cover materials can be produced in the future than was previously possible.

The Wildlife Commission has recently begun an extensive program of making the fishing waters of the state more accessible to sportsmen. The operation consists of cutting roads into good fishing or boating waters, clearing parking areas, and installing boat land-

See REPORT page 16

PROTECTOR OF THE MONTH

Walter Bray

Born in Richmond County in 1890, Mr. Walter Bray saw overseas service during the first World War. He was wounded in the last battle of Verdun.

Mr. Bray was employed in July of 1934 and has just rounded out twenty years as a Wildlife Protector. During that time he has been one of the leading case-makers in the Wildlife Protection Division.

He is married and has four children, three daughters and one son who is presently serving in the United States Navy.

Enforcement Division Record for June

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of June, 1954:

Persons checked	**76,895**
Prosecutions	**1,123**
Convictions	**1,067**

A total of $5,324.10 in fines was collected and paid into the school funds of the counties in which the convictions were obtained. Fines were not collected, being either suspended or not levied, in 52.29 per cent of the total number of convictions.

It's The Law!

Question: May the owner of a private pond lawfully charge a fee for fishing therein?

Answer: Yes, provided the fee is charged for the privilege of fishing rather than for the fish which may be caught. While the law provides that private pond owners may sell game fish therefrom for stocking purposes, the sale of game fish for any other purpose is unlawful. The Attorney General of North Carolina has expressed the opinion that, if the amount of the fee charged is made to depend on the number or pounds of fish caught, the transaction actually amounts to a sale of fish for food purposes, rather than a sale of the privilege of fishing without regard to whether any fish are caught. Of course, no objection could be raised where only nongame fish are involved, since the sale of nongame species is legal.

REPORT

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ing ramps. The Engineering Division is doing the road building and clearing operations, where the jobs are large enough to justify moving the Commission's equipment.

Maintenance and repair of refuge and hatchery buildings and facilities are the most widespread and time consuming of the division's functions. This type of work must be carried on without seriously interrupting the activities at the hatchery or refuge. Many times, private companies cannot afford to take these jobs because of the time that would be lost. The Engineering Division falls heir to these projects, as a matter of course.

By way of report, the following work was completed during the last biennium: Several ponds at the Pineola Hatchery were improved. At the Waynesville Hatchery, the hatchery building was painted and equipped with gutters, concrete holding tanks were installed, and auxiliary water lines were replaced. Roaring Gap Hatchery received repairs to the water line and the assistant manager's house. New storm sewers and drainage lines were installed at the Marion Hatchery.

Game refuges were not without attention, either. The refuge manager's house was painted inside and out at the Uwharrie Refuge, and an equipment building was constructed. An area headquarters was let to contract at the South Mountains Wildlife Management area.

So we see that one of the primary duties of the Engineering Division is to develop and keep in good condition the installations of the other divisions of the Commission.

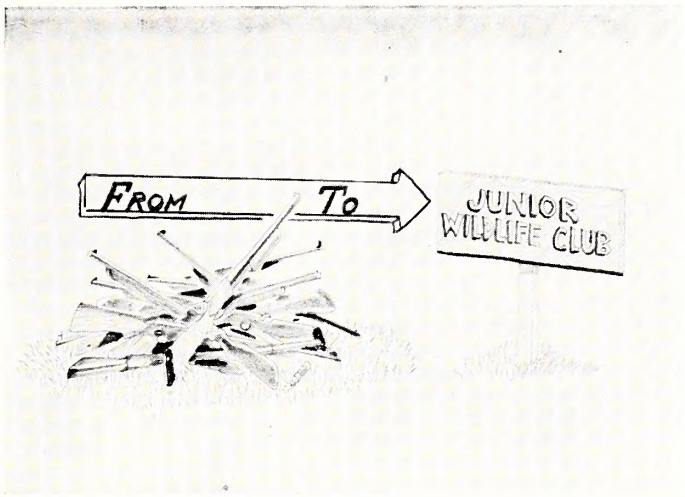
It takes an efficient, well planned operation to keep this program going over an entire state, and take care of any other construction that is needed. Add this to the planning and supervision of contracted projects, and you have an operation of considerable magnitude. Complete cooperation with other divisions and carefully laid and well executed plans make it possible for the Engineering Division to contribute its part in the Wildlife Commission's program to provide "MORE SPORT FOR MORE PEOPLE . . . EQUAL OPPORTUNITY FOR ALL."

SCHOOL PAGE

by Lunette Barber

Something Is Being Done

A shining example of how conservation can be used to make classroom work more interesting —and more valuable.



Most citizens in Western North Carolina are proud of their natural, renewable resources and are interested in conserving them. Mrs. Love Gudger, eighth grade teacher of Candler High School, Buncombe County, realized the fact that "When people feel a need, they find a way." She feels the need of conservation, so she began "a way" by teaching a unit on wildlife conservation.

With about twice as many boys as girls, and almost every boy the proud and inexperienced owner of a rifle, a Junior Wildlife Club was organized along with the unit of work. After the club was organized and the unit under way, with interest at high level, the boys and girls decided that the study needed to be increased to take in soil, water, and forest with wildlife, because they are inseparable. The whole group became nature enthusiasts. They introduced conservation into all their work, adding new words to their vocabulary for use in English and grammar. Many well-known and beautiful poems were studied: *The Sandpiper,* by Celia Thaxter; *To A Waterfowl* and *Robert of Lincoln,* by William Cullen Bryant; *Ode To A Nightingdale,* by John Keats; and *To A Skylark,* by Percy Shelley. The most popular song learned was *Trees,* by Joyce Kilmer. In fact conservation entered each subject. They made a study of the causes of forest fires and how they affect fish in the streams, studied conservation of streams, visited a trout hatchery and a mink ranch, and had a field trip to Pisgah National Forest.

While teaching the unit and arranging programs for club meetings, much careful planning was done in presenting films, slides and resource-use aids. The children also became familiar with some of their federal and state agencies. Several of the movies used were secured from the Wildlife Resources Commission, and much information was obtained from the magazine, WILDLIFE IN NORTH CAROLINA.

As a result of teaching the unit on conservation and the Wildlife Club activities, the group gained a greater appreciation of birds and mammals to the extent that their guns are now used within the limits of the laws and regulations relative to hunting and to the seasons. A better understanding of the proper use of firearms, by demonstrations, is expected to reduce the hunting casualty caused by inexperience and carelessness. Records indicate that the hunting casualty is greatest among teenagers. So it is very obvious that safety education is always an investment. The pupils not only learned about conservation and safety, but they applied some of the practices at home and in the community.

This activity began because a teacher was interested. She learned along with the pupils—together they succeeded. You, the teacher, too may have the same teaching experience with positive results. A summary of reports from a great number of teachers throughout the state indicates that their teaching has become a greater pleasure, with more satisfaction gained by the integration of the conservation theme with existing subjects.

The school year is beginning! A happy experience is awaiting you and the children as you teach and learn about the natural resources of North Carolina, and how dependent we are upon them. We, of the North Carolina Wildlife Resources Commission, will be more than glad to assist you with materials for teaching a unit on Wildlife. A good introduction to the unit, which is free, is a new publication, OUR WILDLIFE NEIGHBORS. Ask us for yours now!

North Carolina supports plantlife generally found in Canada to the North, and northern South America to the south.

The natural resources of the state provide industry and occupation for over 90% of the people.

North Carolina ranks fourth in the United States in the amount of inland water area.

About 400 species of birds may be seen in North Carolina, as well as 92 species of mammals.

Only 10% of the birds are classified as game birds, and 24% of the mammals are classified as game mammals or fur-bearers.

Sketch by Duane Raver

Who else but a beagle can go into the dense growth of honeysuckle and briars to chase out the thicket-loving cottontail.

LITTLE BEAGL

by Jan Martin

(Jan is a 16-year-old from Mayodan, N. C. This is his first literary effort)

The day dawned cold and silent. Except for the loud, awakening ring of the alarm clock, not a sound was heard. Pa slowly and reluctantly eased out of bed, put on his hunting clothes laid out the night before, and went into the kitchen to prepare breakfast. Soon to my nose came the pleasant, aromatic smell of frying bacon. I lay there thinking of today's hunt which had been planned for two weeks. Today was the last day of the rabbit season, the last day in which a man could forget his troubles, gather up his pack of dogs, and journey to the great out-of-doors to hunt his favorite small game animal.

Soon my dreams were interrupted by Pa's bidding me to breakfast. After a hurried bowl of oatmeal, platter of bacon and eggs, toast and coffee, I slipped on my hunting clothes, counted my shells, which were few, and took out my trusty, old .410. Pa said we were ready, and we were finally on our way.

As I stepped out into the morning air, a gust of cold, biting wind chilled me to my backbone. It was going to be a cold day, I thought. Pa was whistling up our pack of beagles, which consisted of Queen, the jump dog; Belle, a steady, slow-working dog with a good nose; and Lady, our pride and joy. Lady was known all over town and half the county. Many a person had tried to buy her, but none had succeeded. She had been ours now for two years, and if nobody stole or ran over her, she would be ours for many more. She was a comparatively small dog, being of the finest stock. Her black and tan coloring was inherited from her mama, who was a field trial champion. Pa had gotten her as a puppy and trained her to be the great dog that she is now.

Having filled the trunk on our car with the dogs, we went to pick up my brother, Earl, who was to accompany us on the hunt. He, like myself, had rather hunt and fish than to eat. Before he left our household and got married, we spent many hours in the backyard, practicing with our casting rods and knocking tin cans off clothes-line posts with our 22's.

We picked the Chatham farm for our hunt today. Pa knew the owner, who had let us hunt there all year. We got there about 7:30, unloaded our dogs, and decided to first hunt the patch of honeysuckles just down the hollow. The dogs went on ahead of us, raring to have their first race. The honeysuckle patch had nearly always contained a rabbit or two, and today was no exception. As soon as Queen waddled into the thick undergrowth, out rolled a flashing ball of brown fur. The rabbit almost ran smack into Lady's mouth, and she kept within a dog's length of the rabbit for about 25 yards. The pack of three kept the rabbit running hard, and the rabbit, following rabbit instinct, made a circle and headed back to where it was jumped.

I could hear Lady's shrill baying above all the others. She was far ahead of the other dogs, and was running the rabbit sight-race. I hurried to the nearest clearing where he was likely to come out. I picked out a spot where I could see the length of the field, and waited. The dog's baying was coming closer and my trigger finger was getting itchy.

Then, the rabbit burst out of the brush into the field not far from me. I nervously cocked my gun and started to shoot. Then, I did a foolish thing. I had an idea that the rabbit would surely come closer than that. So I waited. For a second he still came right at me. Then, Lady burst out into the field and caused the rabbit to hop back into the brush before I could get a shot. That, of course, made me sick. That was one time when I didn't think so much of Lady.

I decided that I wouldn't give up, so I started to run back to where the rabbit was jumped. But before I hardly got started, I heard Pa's double-barrel sound off. When I got there he was standing on a sawdust pile, putting the rabbit into his hunting coat. That taught me not to wait on a rabbit when you already have a good shot.

We had good luck that day, killing eight cottontails. It was about four o'clock and we decided to call it a day. Pa started to call up the dogs. Slowly and reluctantly they came in. After about fifteen minutes they

LOST

The thrill of a successful hunt, and the heartbreak of a boy who has lost his dog make this story appealing to all age groups

Photo by Hemmer

Even a box of beagles like this cannot repay a boy for the anguish he suffered when he thought he would never see his dog again.

were all there but Lady. We kept whistling for her, but she didn't show up. Lady had never stayed away like this before, always coming in when you whistled for her.

I could tell that Pa was beginning to get worried. I myself wondered where she could be. Maybe she got caught in some vines or something, I thought. Or maybe somebody had stolen her.

"Son, when was the last time you saw her?" Pa asked.

"I guess it must have been around two hours ago," I replied. "It was when the pack ran that rabbit across the cornfield on the other side of the creek."

"Well, he said, let's go hunt for her over in that direction."

We hunted for her the remainder of that day with no success. We were a sad lot when we trod into the house that night. Ma had supper ready, but none of us felt like eating.

News got around fast that Lady was missing, and soon a few of our neighbors came over and asked what they could do. It was decided that we would go back to the farm tomorrow and look again. The neighbors had borrowed Lady at times and were ready to hunt for her to show their gratitude.

We went back to the scene of the hunt. We split up and hunted every stretch of land that we had an idea Lady might be in. We hunted every field, every patch of woods; we combed every hollow and hillside; we looked through every likely spot where she might be caught in some vines, but still we found no trace of Lady.

We assembled back at the starting point and decided what was to be done next. The men wanted to go back and look again, but Pa said that it was no use. She was gone and that was all there was to it.

Days passed into weeks; weeks passed into months; two months had passed since Lady had disappeared. Our family had nearly gotten over it. Hunting season was over and it was now fishing time. Lady was not missed so much then, but we knew that when hunting season rolled around again, we would feel her absence.

Then, one day I was out behind the house digging worms. When Pa got out of work, we were going fishing. It was always my job to get the worms. I was nearly finished, and I paused to wipe the sweat off my brow. As I stood there, trying to cool off, I happened to glance toward the road.

There trotting leisurely along, was Lady, being followed by seven beautiful beagle puppies. I ran into the house as fast as I could.

"Ma," I called, "Lady's back, Lady's back." "She's got seven pups."

"What," she answered. "How could that be? How could she possibly be alive after being away this long?"

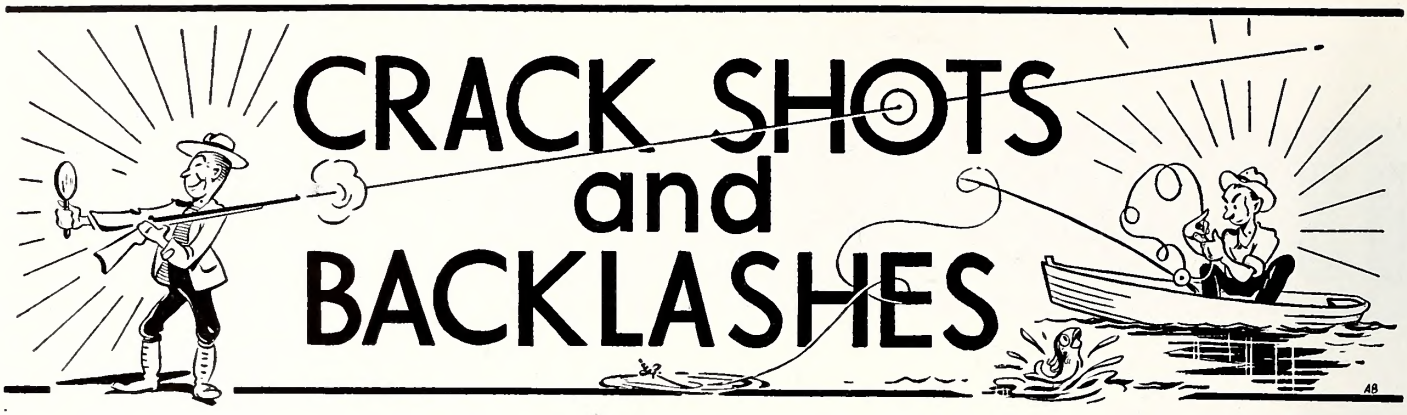
"I don't know, and I don't care." I said. "All I know is that she's home. I'm going to call up Pa."

Supper that night was a joyous occasion. We went over what probably happened. More than likely, she had gone off where no one could molest her to have her pups. Then she had to wait this long to return because she knew that puppies couldn't travel until they were about two months old.

The puppies were as beautiful a litter as Pa had ever seen. They were all the color of Lady, a beautiful black and tan. They were perfectly shaped; they had straight legs and backs, and perfectly shaped heads.

The next day, Pa built a big, roomy lot in the back yard. He fixed a big box, where the pups could sleep and a big area where they could move about. The puppies would be trained this fall, and would be ready to run in about two years.

But all the beauty that the puppies possessed couldn't make up for the anguish that we felt when Lady was gone. We all hoped that Lady would never again be a little beagle lost.



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Tar Heel dove hunters were granted a bonus of dove shooting this year with two 20-half-day seasons from September 10-29 and December 10-29. The Fish and Wildlife Service suggested two alternatives by way of a dove shooting season. The State had its choice between thirty full days of shooting and forty half days. Since most dove hunters prefer half day shooting the forty half-day schedule looked best. It will make possible bracketing the peak of the dove flight in both the fall and winter periods, with twenty half days for each session.

Gunning for rails and gallinules, more popularly known as marsh hens in North Carolina, is becoming a more popular sport in recent years. The Fish and Wildlife Service has granted 10 additional days of shooting this year. Thus the chances of getting birds will be increased. Most marsh hen shooting is done at the highest wind and moon tides early in the fall when the birds are still here in numbers, and when the vast marshes are covered with enough water to allow a boat to be poled through and over the heavy vegetation.

For a number of years marsh hens were completely protected by federal rule, and during those years interest in this excellent game shooting was reduced to a minimum. Now, with a long season and liberal bag limits, more and more interest is growing in a game bird which is plentiful.

Another sport that is growing rapidly in North Carolina is archery. There are a number of archery clubs scattered over the state, most of them affiliated with the National and State associations. It is all very well to spend an afternoon shooting arrows at a target, but most archers prefer to use their skill to take deer or small game. Under present law, technically speaking, it is not quite clear whether using the bow and arrow to kill game is legal. The law specifies that game may be taken only by rifles or shotguns of ten gauge or smaller. This law does not directly prohibit archery hunting, but it does not definitely make it legal.

There is a movement among organized archers to present to the 1955 Legislature an amendment to the law making archery hunting legal within reasonable restrictions.

From the point of view of conservation, archery holds up well as a means of taking game. Certainly the bow and arrow cannot compete with high power autoloading guns. Kills are usually clean with few crippling losses. The game must be in clear view at close range before the archer can expect to bag his quarry. A steel pointed shaft from a fifty-pound-pull bow can pin a buck to a tree, or nail a cottontail to the ground.

* * * *

Although it is too early to record concrete results, a liaison committee, formed of members of the board of Conservation and Development and the Wildlife Resources Commission, has had at least one important meeting and has plans for another late in September. The purpose of the committee is to work jointly on problems which affect both groups, especially where commercial and inland waters join down in the tidewater section. Problems arise with regard to species of fish which are normally considered commercial, salt water species, but which come well into the center of the state to spawn.

It was apparent from the first committee meeting that there is willingness and enthusiasm on both sides to work out problems to the benefit of all concerned.

* * * *

You can tell the fall of the year is coming around again. The old, old problem of farmer-sportsman relationships comes up each year as regularly as the hunting seasons. Here are O. V. McGee's comments on the subject:

"Dear Sir:

I take and greatly enjoy reading WILDLIFE. I am very much interested in wildlife on my farm. There is for my small farm an abundance of food and some coverage for quail and rabbits. I really like to see them in their natural habitat. It is a source of joy now that the country is becoming so densely populated to have them about. I never shoot them, or, I might say shoot at them. I would like to preserve what wildlife I have just to have them about. The little fellows are so pretty and harmless and I feel that their life is just as sweet to them as my life

Photos by Rod Amundson

At a demonstration given to the Durham County Wildlife Club by Ken Beegle, Remington Corporation, club members and visitors saw some outstanding shooting and picked up some pointers on gun safety. Above, Ken draws a bead on the bar of soap in his wife's hand, even though handicapped by a shield which completely covers the front sight.

Right photo, a perfect shot. How about it, Ken. Now will you believe a .22 rifle can be dangerous?

is to me or yours is to you. I sometimes wonder how a hunter would feel if a pack of lions was after him or, how a dog would feel if a dozen coyotes were right on his heels.

"Some no doubt will come up with the argument that, "The Good Lord put them here to hunt and eat." For all I know it might be the other way around. If animals and birds were put here for us to abuse, hunt and kill them why do they not just approach us, lay themselves down and say, "Master, here am I." I raise cows for sale and table use and of course I buy chickens and other forms of food, but never in my life have I thought and felt just right about it. So much for this.

"The point I would most like for you to pass along is that, very few hunters have any land of their own and it has been my experience that most hunters positively have no regard whatever for the property of others. They will hunt without permission. They will shoot everything in sight, tear down fences, take more than the bag limit, shoot doves after sundown and even come near your premises shooting like an army. I have known of cows being killed and injured as well as many other domestic animals. If anyone does not know what I am talking about just invite a few of your well chosen business friends to your place for a hunt and see what happens. Chances are they will bring along some whiskey and their fine artillery and you will soon find out that you would have been better off if you had invited a bunch of desperadoes.

"I have a friend who has a large farm and several hundred fine milk cows. He invited about thirty of his friends to come out and hunt doves. Well the day set for the hunt they came in droves with full hunting regalia. Guns and shell in abundance and fine cars. Remember he invited them. He had no room to kick and he never offered a quack. Everything went along fine. The finale to the story is that the hunt cost him 500 gallons of milk. Why, because the cows were so excited and upset from the shooting that the milk production was curtailed. Right expensive dove shoot.

"I believe in wildlife propagation, protection and conservation and all these things but until if and when hunters show more regard for the land owner, his property and even the laws I will never give permission for anyone to hunt on my land.

Yours very truly,
O. V. McGee
Monroe, N. C."

Bob Hurst wants a final word on jigger fishing:

"Dear Sir:

I recall some four or five years ago that jigger-fishing was outlawed. Recent rumors indicate that it is now lawful to do jigger-fishing, using a line less than two feet long. Can you set me straight on this matter?

Yours very truly,
Robert E. Hurst
Durham, N. C."

Several years ago there was a regulation on the Wildlife Commission's books prohibiting jigger fishing. The rule was one which carried over from years past. Because of the impossibility to put a clear definition on the activity known as jigger fishing, and because the rule was literally impossible to enforce, it was rescinded back in 1949 or 1950. Most jigger fishing involved an ordinary fish pole with about two feet of line on the end. A lure was dangled at the end of the line so that it jiggled up and down on the surface. This apparently drove bream or robins or goggleyes to distraction and

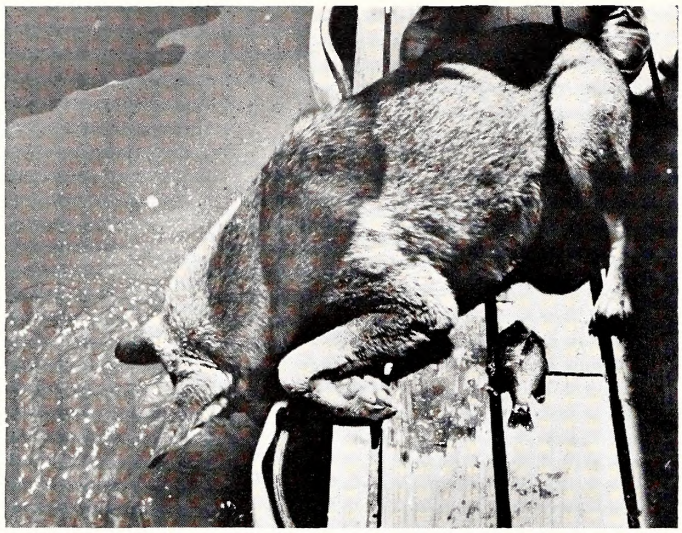


Photo by Luther Partin

Butch, a German Police, hangs out at the Vance County Wildlife Club Landing on Kerr Lake. When people throw food in the water for the fish, he's usually on hand to catch a few. He doesn't bother with little ones.

destruction. Some say the method is quite successful, others say it won't work.

"Dear Sir:

Your front cover in July issue of WILDLIFE is the most animated picture that I ever saw on any sportsman magazine.

"Your article on "How to drownproof yourself," I think, should be in every magazine and paper. I read every issue and enjoy them very much.

Sincerely,
Dr. R. M. Blackman
Selma, N. C."

To Dr. Blackman, THANKS! "How To Drownproof Yourself" had wide publication in the outdoor magazine field.

"Dear Sir:

I have been a subscriber to your magazine for several years, and think it is the most interesting of any magazine I ever read. I am writing this letter to congratulate you for publishing the unsigned letter, June issue, I have not the least idea who he could be. But one thing I do know he is a real man with a level head. I saw no hot air in it. If all the sportsmen were like him, we would all get more out of it. There are a lot of men, well I will not call them sportsmen, I guess you might put it game HAUGS and on the opening of the squirrel season here on Indian Creek, Yancey County, there is more of this character than anything else. I don't mean our citizens and neighbors but from other places. They will come in from different places by the car load and they will manage to be here before daylight, then the guns begin to fire in all directions. And they shoot everything from a Chipmunk on up.

"The bag limit is not in it. I have heard of fellows, going out, and boasting about bagging up forty squirrels and two or three grouse. That is a dirty shame. I wish we had more men to write on these things like the one that wrote the unsigned letter. Congratulations to him.

Yours truly,
C. C. Maney
Cane River, N. C."

Photo by Richard Matt, Inc.

The latest in fish conservation. If more gals go fishing in outfits like this, nobody will pay any attention to the fish.

JUVENILE FISHING

I have been Juvenile Court Judge in King County, Washington, for over twenty years, and during that time I have handled some forty-five thousand juvenile cases. As a result of that experience I have come to the conclusion that most youngsters go wrong simply because they do not have anything else to do. City kids do not have the chores to do that most of us had when we were growing up. It is more difficult for them to get out into the hills and on the waters and in the mountains. Paved streets and alleys are not very wholesome places in which youngsters can give vent to their abundant energies and their hunger for adventure. Many of them turn to stealing cars and burglary for their outlets.

It has also been my observation, however, that these same kids respond naturally when given an opportunity to hike and fish and climb, and I can not recall a single case, in twenty years, of serious juvenile conduct involving a youngster whose hobby and recreation outlet was fishing.

—Judge William G. Long
Superior Court
Seattle, Washington

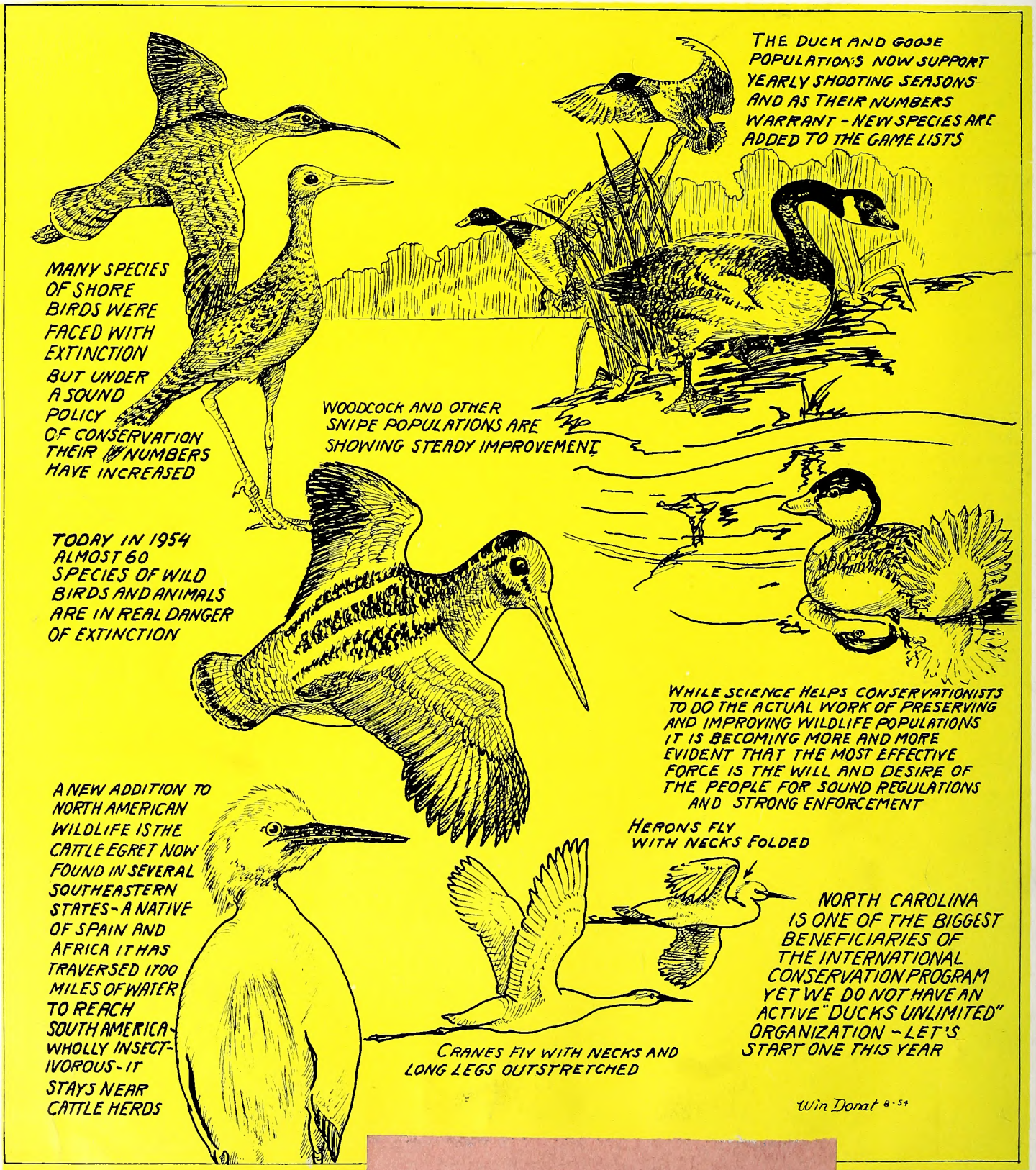
September Silhouettes

In September, the sportsman's spirit finds rejuvenation. The hot, dog days of August become a memory, and the rise of a fighting fish is all the encouragement needed to make him rig his tackle. With the lowering of water temperatures, the fish, too, lose their midsummer laziness and their appetites sharpen. Once again the surface lure is tops for fishing thrills, and throughout the vast waterways of North Carolina the success story on the right will be repeated many times over.

For those who have fished hard all summer and long for a change, the early opening of the mourning dove season gives promise of good days of September sport. The hunter knows that doves are a real challenge to his marksmanship and provide a good opportunity to sharpen his shooting eye before the main hunting season opens. This year doves can be hunted from noon until sunset during two seasons of twenty days each: September 10 through 29 and December 10 through 29. The bag limit, daily and possession, is eight birds.

Photos by Jack Dermid

CONSERVATION HAS PAID DIVIDENDS



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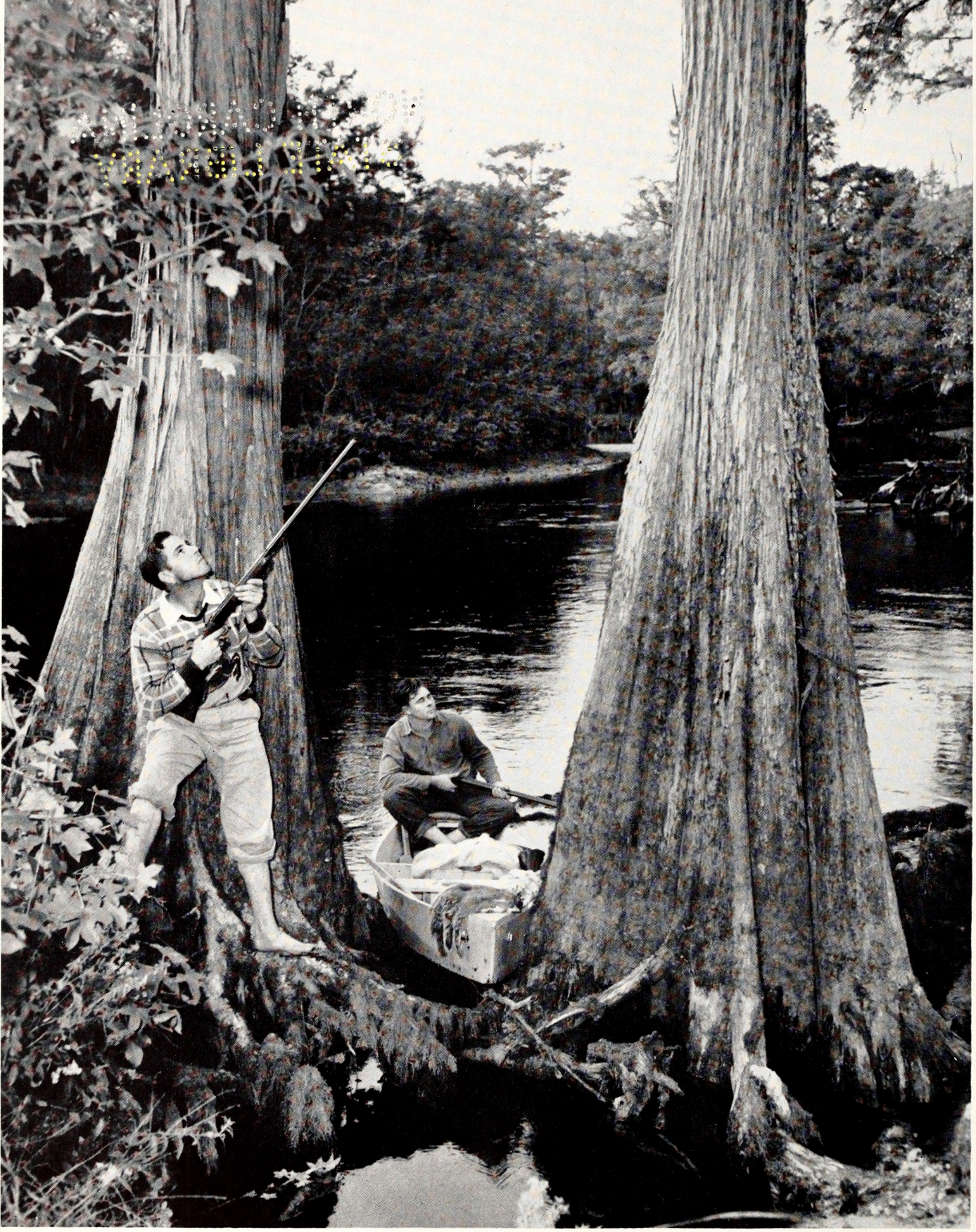

Photo by Jack Dermid

River Hunt

Squirrel hunting is second only to rabbit hunting in popularity in North Carolina. It is fun hunting bushytails in the back woodlot, but to drift down a wild river for them is real outdoor adventure. Here Ernest Higley (left) and Clyde Burney of Lumberton beach their skiff at a likely spot on the Lumber River.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

WILLIAM B. UMSTEAD
Governor

North Carolina Wildlife Resources Commission

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COVER

Autumn comes to Courthouse Creek in the Pisgah Game Preserve. October is Mother Nature's month for the harvest of color. When the leaves don their red and yellow hues, the whole out-of-doors becomes a fairyland that stirs even the most dormant spirit of wanderlust. Color photograph by Jack Dermid.

☆ ☆ ☆

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Jack Dermid ..... *Managing Editor*
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☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

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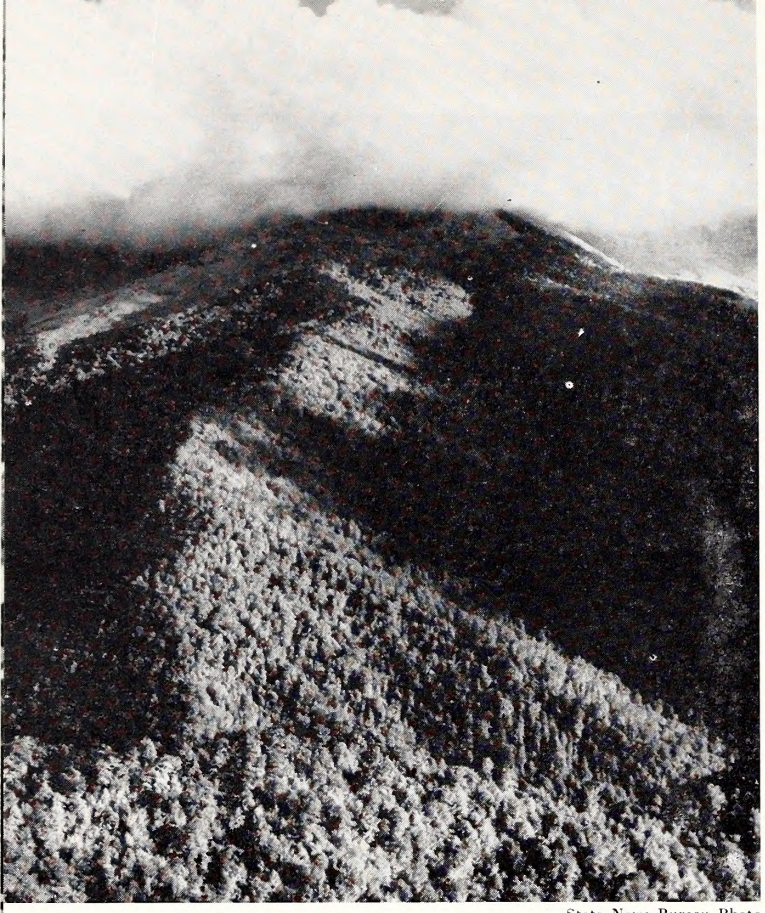


State News Bureau Photo

From the rolling, agricultural Piedmont to the spruce and balsam forests of the mountain heights . . . District Eight.

Stretching from Tennessee on the north to South Carolina on the south, Wildlife Resources Commission District Eight offers the widest variety of topography, climate, and game found anywhere in the State. One might consider it an east-west cross section turned north and south. The southern portions of this district are flat, somewhat sandy, and warm—superficially resembling Coastal Plain country. The central portion is rolling land, well watered, and highly agricultural—typically Piedmont. The northern tier of counties lies in the Mountains—cool and high, with fewer people, less industry, and less intensively farmed.

On a trip from south to north, one would start at about a thousand feet above sea level and climb the Blue Ridge Mountains to more than six thousand feet above the sea. In fact, the highest point east of the Mississippi is found in this northern tier of counties. That point is Mt. Mitchell, which reaches 6,684 feet into the heavens.

Along with this great contrast in topography one also observes a difference in climate. The southern area has mild winters, rarely with snow, and a minimum number of days with below freezing temperatures. The central counties experience a more harsh winter—still not too much snow but many more below freezing days. In the mountains, the winters are much the same as in the New England states—cold and long with much snow and ice. Snow sometimes falls as early as November and as late as May.

DISTRICT EIGHT

REGION OF

Another contrasting factor within these counties is the degree of industrialization. In District Eight one will find such populous cities as Hickory, Shelby, and Gastonia with their thousands of people and diversified industries. At the opposite end of the scale are such wild and primitive areas as the Linville Gorge, approximately fourteen miles of near virgin wilderness, and the heavily-wooded mountains of the North Carolina National Forests.

Game abounds, both in variety and number. Most of the game animals found in this State are represented in District Eight, with the exception of European wild boar and the rails. Ducks and geese, while not abundant, are bagged on the many lakes and rivers. Big game hunting is becoming increasingly popular in the northern counties of the district, and hunters from all over this State and neighboring states come to these "hills" for a deer or "bar" hunt.

One cannot speak of deer or bear hunting without remembering the splendid refuge system found in this district. The Daniel Boone and Mt. Mitchell Wildlife Management Areas have been providing excellent hunting for a number of years, and within a short time two more areas will be opened to hunting. These are the Flat Top area in western Yancey County and the South Mountains area in the southern part of Burke County.

These areas were originally established to increase the big game in the surrounding areas and, to this end,

The Commission and local wildlife clubs have cooperated in stocking hundreds of raccoon in areas where they have become scarce.

by Edward Ray Smith, Jr.
District Biologist

CONTRAST

they have been a welcomed success. Grouse, squirrel, and coon hunts may also be had on the Daniel Boone and Mt. Mitchell areas. Many deer and bear are killed each year, miles from the nearest refuge where they or their parents were born. The quantity of game outside the management areas is a tribute to the success of the refuge system. It is also a tribute to the refuge personnel and the county protectors who help enforce the game laws on and off these areas. Without their untiring efforts and sacrifices, our wildlife management areas would have little meaning or effect.

In the near future the management areas are scheduled to play an important role in the restoration of that grand game bird, the native wild turkey. The Wildlife Resources Commission is removing surplus turkeys from some of its central and eastern refuges and stocking them in the western management areas. So far only one refuge, the Flat Top Wildlife Management Area, has received turkeys. Eleven birds have been released there and, according to all reports, they are doing well. So, before long, the turkey hunters of this district can again hunt their favorite quarry right in their own "back yard."

Another bright spot in game management in this district is the combined efforts of coon clubs, the Wildlife Resources Commission, and eastern trappers to restock raccoons. These great little animals are trapped in the eastern part of the State, where they are so numerous as to cause damage to farm crops, and sold to coon clubs for restocking. The Commission then reimburses the clubs for one-half the cost of the stock. According to all reports, this cooperative effort is paying off in the form of many more coon "races" during frosty, fall nights.

Little mention of squirrels needs to appear here. Almost everyone knows of the unusually large number of squirrels that have inhabited our woodlands the past two seasons. This has probably been due to abundant mast crops, but the vast acreage of hardwood forests in this district insure fair to good squirrel hunting at all times.

The farm game is District Eight, while not as abundant as in former years, is staging a successful comeback. Intensified agriculture during the past two decades has severely reduced good farm game habitat; but the farm game habitat restoration project of the Commission has been received with great enthusiasm and holds forth great promise. Many farmers, 4-H boys, vocational agriculture students, and wildlife clubs are cooperating in this project to get more food and cover on the farms, so that quail and rabbits will again be abundant.

Last year, 321,010 multiflora rose plants, 481,000 bicolor seedlings, 1,209 pounds of sericea seed, and 39,150 pounds of annual seed mixture were distributed, free of charge, to people interested in improving their land for rabbits and quail. The 481,000 bicolor plants were composed of 408,500 bicolor lespedeza, 49,500 VA-70, and 23,000 VA-74. VA-70 and VA-74 are hardy strains of bicolor adapted to the colder climates of the mountain counties.

Even though these figures are impressive, many more of these habitat-improving plants should be set out to still further improve farm game habitat. With our in-

•——————See DISTRICT EIGHT Page 17

Nucleus of a new population — eleven live-trapped wild turkeys have been released on the Flat Top Wildlife Management Area. Photo by Ken Chiavetta

Last year, 321,010 multiflora rose (below) and 481,000 bicolor lespedeza plants were distributed in District eight to improve small game habitat.

Canada geese are great game birds. Just as corn, wheat, and cattle are crops of the land, so is wildlife. Every autumn and winter the legal hunting season is the time of harvest of the surplus.

The HUNTING OUTLOOK for 1954-55

by Clyde P. Patton
Executive Director
Wildlife Resources Commission

With autumn comes the harvest of North Carolina's tremendous agricultural resources. Later as the days grow cooler and the nights become frosty, the annual harvest of our crop of game begins.

Last summer a prolonged drought threatened to reduce the yield of our State to a mere dribble, but rains came in time to most parts, and the harvest showed promise of being bountiful.

During the 1954-55 hunting season one of the largest, if not the largest, armies of hunters in the history of the State will take to the woods and fields and marshes in pursuit of game. What will the harvest be?

In terms of legal shooting seasons and legal bag limits, the Wildlife Resources Commission, acting under authority of law, has formulated a set of rules on seasons and bag limits as liberal as any that have been in effect since restrictions on hunting were first imposed. These seasons and bag limits were determined from intensive research into the potential abundance of game, plus consideration for the opinions and desires of the thousands of sportsmen who go hunting.

September 1 marked the earliest shooting when the season on marsh hens opened along the vast marshes of the coastal sounds and bays. This was followed by the opening of the season on mourning doves on September 10. Both these birds, plus ducks, geese, and other waterfowl, are under the control of the federal government due to their migratory status. The waterfowl season will open at noon on November 10 when young and old birds come down from their northern breeding grounds to spend the winter in North Carolina.

By late summer it was evident that the U. S. Fish and Wildlife Service, which sets the seasons on migratory game birds, considered that both marsh hens and doves were more abundant than last year. A longer shooting season was granted for both. The picture on waterfowl seems to be about the same as last year. The nesting season started later than usual last spring, but the hunting season and bag limits will be as liberal as the ones enjoyed last year.

Deer

As a result of the Wildlife Resources Commission's big game restoration program which has been under way for several years, there are now deer in more North Carolina counties than for many decades past. In some of these counties herds are only recently becoming established. As has been usual for a number of years, however, deer are most abundant in the eastern counties where dense forests and thickly grown swamps provide almost inaccessible cover and an abundance of food. In some counties deer have become numerous enough to cause crop damage, and it logically follows that in these counties deer hunting will be most successful in the 1954-55 season.

Bear

Being forest-loving, bear generally benefit from the same management practices that affect other big game. As in the case of deer, bear are most abundant in the eastern section of North Carolina. Although reports of bears damaging agricultural interest during the past few months have not been as numerous in the past few years, this reduction of damage is probably more due to protective measures than any scarcity of bears. In most areas the season and bag limits for bears are

identical with the regulations in effect last year. Such areas as Green Swamp and Dismal Swamp will again yield huge creatures weighing in the 500-pound class.

Wild Boar

The wily, vicious wild boar is found and hunted in only three western North Carolina counties, Clay, Cherokee, and Graham. Although efforts have been made to increase wild boar populations in this section, little direct benefit has been observed. It is clear, however, that wild boar respond to management practices which benefit deer and bear.

Raccoons

As has been the case for the past six or seven years, raccoons are plentiful to the point of over-abundance in the eastern third of the State, and scarce in the western section and most of the Piedmont. For several years, the State has supervised and assisted in a program of live-trapping coons from localities where they have become too abundant, and transporting them to sections where there is a strong hunting demand but very few animals. Under this program thousands of raccoons have been removed from areas where they were damaging crops and placed in the western woodlands where they are in demand. This satisfies two conditions: over-abundance and scarcity.

Because of the continued demand for more coons and better coon hunting, greater restrictions on the manner of taking coons have been imposed west of U. S. Highway No. 1.

Opossum

Since the federal government imposed an excise tax on furs, the possum has enjoyed a falling off of popularity with the Tar Heel trapper and hunter. As a result of very light hunting and trapping pressure, possums have become and remain numerous throughout their range. A few hunters and trappers take possums inadvertently, but most are killed by the folk who have kept a life-long appetite for possum and taters as a special delicacy.

Squirrels

For the third time North Carolina has been divided into three general regions for squirrel hunting, the east, central, and western zones. This division was made out of consideration for the breeding seasons of the species, plus the seasonal occurence of warbles or "wolves," bot-fly larvae that make the flesh extremely unappetizing.

Squirrels seem to have held their own with regard to relative abundance, although there will be local differences in abundance depending on the mast crop and other factors. North Carolina boasts three types of squirrels for hunting, the southern fox squirrel, the grey squirrel, and the red squirrel or boomer. Flying squirrels are not considered to be game animals and are rarely bothered by hunters.

This fall many a brunswick stew will be graced by the flesh of a squirrel or two taken in the prime condition.

Rabbits

Town dwellers, gardeners, orchardists, and many farmers, declare that rabbits are too numerous and need drastic control. Rabbit hunters who follow packs of beagles declare that there has never been an over-abundance of bunnies. The shootable population of rabbits this year is probably somewhere between the opposing opinions. Rabbit hunting is probably the most popular shooting sport in North Carolina just as it is in nearly every other state. Although hunted heavily, rabbits are extremely prolific. In most instances they continue through the years to supply an abundance of sport for hunters, plus a staple diet for predatory species. By and large, the outlook for rabbit hunting this season is good.

Quail

A cold, late spring with later than usual frosts curtailed somewhat the production of birds this year. Nesting was at a peak of activity later than usual and it is likely that in many areas there will be fewer birds than last year. Years of habitat improvement, however, through planned plantings of bicolor lespedeza and other soil conserving plants, has paid off abundantly and despite adverse conditions during the nesting season quail hunting should be good in most areas.

•——————See HUNTING OUTLOOK Page 20

Although spring quail production was not up to expectations, there should be enough birds to provide good hunting in most sections. Photos by Jack Dermid

$ The Sportsman's

An Operational Report of th

A modestly-dressed man walks up to the tackle counter in a sporting goods store. He gazes longingly at the display of fishing rods in the wall rack. Finally, he centers his attention on a showcase completely filled with fishing lures. Every one a fantasy of color, some equipped with wings, some with legs. Many replicas of insects, animals, and frogs can be recognized. There is an even greater number of a definitely questionable identity.

The man, whom we can now recognize as an incurable fisherman, caresses the bits of metal, feather, hair, and wood as a child might fondle a new doll. He tries to visualize them as fish will see them in the water. Choosing a popping bug that, to him, represents the supreme in fish-appeal, he pays the clerk for the lure and a new combination hunting and fishing license.

It may come as a surprise to many, but the sportsman above, and many others like him, are the major stockholders in the North Carolina Wildlife Resources Commission. In North Carolina, the sportsman's dollar pays for the program of wildlife conservation and improvement of hunting and fishing. The majority of the Commission's funds are obtained from the sale of fishing, hunting, and trapping licenses. A lesser amount is obtained as Federal aid, but even this money is made possible by sportsmen who pay excise tax on the purchase of firearms, ammunition, and fishing tackle. No funds are obtained from general taxation.

The Wildlife Commission's Finance and Personnel Division is charged with the responsibility of receiving and dispersing funds, as well as maintaining personnel records, equipment records, and supervision of license sales. All of this is no mean feat, considering the 1¾ million dollars spent by the Commission in the last fiscal year in carrying out wildlife conservation measures required by Tar Heel sportsmen.

Let's have a look at the role played by the Finance and Personnel Division in handling an annual budget of seven figures. Since its organization, the Commission's revenue has increased each year as a result of increased license sales and purchases of sporting goods. This has served to increase and expand its activities into new fields each year. To cope with the growing number and complexity of activities, the Finance and Personnel Division has been divided into six sub-divisions: accounting, auditing, personnel and requisition, federal aid, property records, and licenses. A division chief, five accounting clerks, one typist clerk, one property clerk, and one stenographer make up the permanent staff.

The duties of the division are best illustrated by an examination of the work carried on in each sub-division.

Accounting work includes preparation of payrolls, keeping the Commission's books, writing checks, balancing the bank statement, and the preparation of routine reports on matters of the budget.

The auditing work includes auditing requisitions, purchase orders, and invoices, and preparing them for payment. This category also includes Workmen's Compensation claims and claims for reimbursement of the state road tax on non-highway use of gas.

Individual personnel files and data cards are maintained in the personnel and requisition section, in addition to the preparation of requisition and personnel forms. This-subdivision also handles the bonding of all license agents, handles all claims with the bonding company, and maintains a record of all automotive equipment.

In the federal-aid section one employee is responsible for keeping the books and records on all projects jointly financed by federal money. Since the funds are derived from a special federal excise tax, the U. S. Fish and Wildlife Service is the administrative unit for them. The various states receive their allocation on the basis of the number of licensed sportsmen and the size of the state. For an approved project, a state can receive three dollars of federal funds for each dollar it contributes. North Carolina received a total of $243,778.18 as its share of federal aid in the 1953-54 fiscal year.

In view of the vast operations of the Commission, it is not surprising that a large amount of property is owned. The property records section has the responsi-

The Commission's Finance Division is composed of a competent office force of nine employees who are charged with the responsibility of receiving and dispersing . . .

Dollar $

by Luther Partin

ommission's Finance Division

bility of operating the Commission's warehouse, keeping records of receipts, issuances, and property cards on all equipment.

The sale of hunting, fishing, and trapping licenses is a corporation-size job, amounting to $1,314,838 in the past fiscal year. An elaborate system of checks and controls has been worked out to safeguard the license-buying public. Licenses are consigned to the county protector who, in turn selects agents in his county. The agents must be adequately bonded. The protector collects all receipts from the agent, and mails them along with all records to the Finance and Personnel Division. The license section consigns all licenses, audits all license sales reports, keeps individual records and books covering all license sales, and prepares reports relating to license sales.

It might be interesting to note how the sportsman's dollar is spent. Getting the lion's share is the Enforcement Division, with a little over 40% of the total. This should serve as a reminder to anyone tempted to take a deer out of season, dynamite fish, or exceed the bag limit that such unsportsmanlike deeds make the protection of our wildlife necessary. Were it not for people doing this sort of thing, an additional ½ million dollars could have been made available in the past fiscal year for fish and game restoration and management and wildlife education work. It takes a lot of money to keep

. . . more than a million dollars annually as well as the maintenance of personnel, payroll, and property records and the supervision of the budget. Photos by Luther Partin

a hundred or so wildlife protectors in the field all year, but there are some people in every county who make it necessary. The private citizen can do much to reduce the money that must be spent in this way.

The next largest allotment of funds goes to the Game Division for game development and restoration, comprising about 27% of the total in the last two years. Large tracts of low-value land have been purchased for game management areas. On these areas, game is stocked, if necessary, provided with good habitat, and protected from stray dogs, fire, and poachers. After game populations build up, the public is permitted to hunt the species present according to area regulations. Of course, surrounding lands also benefit from the build-up of game, since there is considerable wandering from relatively thickly populated management areas. Thus the management areas have a two-fold purpose: to supply game for adjacent land and to provide hunting on the area itself. The money spent for this purpose gives tangible results of a satisfying nature.

Another good investment in game work is funds used to provide habitat improvement plants for farmers and landowners. Plants such as multiflora rose and bi-color lespedeza are furnished free for planting in field corners and borders. Successful establishment of these plants usually significantly increases the rabbit and quail population as a result of the increased amount of food and protective cover.

Roughly 12% of the total expenditures during the last biennium were used for fish development and restoration. Fish hatchery operations required much of this allocation. Annual trout stocking has proved to be necessary to maintain good fishing in the heavily-fished mountain streams. Other than this, no additional stocking is practiced, except for the introduction of new species, and where local conditions require stocking to supplement natural reproduction of species present.

More recently, the Fish Division has been using funds for the creation of access areas. There are many stretches of water in North Carolina—good fishing and boating water—that can't be reached except by foot. The program now underway provides automobile and boat trailer passage, parking, and boat loading facilities free of charge to the public, in many of these hitherto inaccessible spots. The access areas have been warmly received and enthusiastically used by Tar Heels.

The above users of funds represent about 4/5 of the Commission's budget, because of the scope and expense inherent to such operations. The three other divisions used about 10% of the dispersed funds: Finance and Personnel, 3.6%; Engineering, 1.0%; Education, 5.4%. The remainder of the budget, about 10%, was required for administration, acquisition and development, and for miscellaneous purposes.

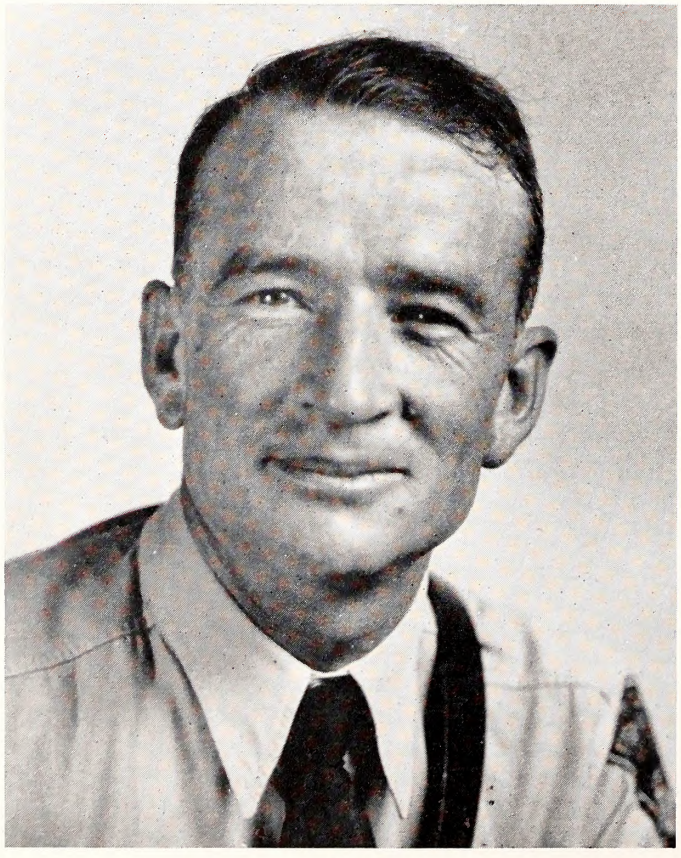
The expenditures of the Finance Division go largely for salaries, printing, supplies, and communication. The major items of expense in the Education Division are

salaries, supplies, communication, motion-picture making, motor vehicle operation, and various smaller requirements. Publication of WILDLIFE IN NORTH CAROLINA is a duty of the Education Division. However, its publication costs are paid by subscribers and with funds allocated from other Commission receipts. The relatively small amount of money used by the Engineering Division results from the small number of employees (only three permanent employees), and from the fact that most of its work is done for other divisions. The chief expenses are salaries, supplies, and equipment maintenance.

The Division of Finance and Personnel acts in a capacity similar to that of the corresponding branch of a large corporation. It is a modern, business-managed organization designed to safeguard the handling and disposition of wildlife conservation funds. From the purchase of a license to the completion of an access area, wildlife movie, or the distribution of wildlife habitat restoration plants, the Finance and Personnel Division assures that the sportsman's dollar is used to provide "MORE SPORT FOR MORE PEOPLE . . . EQUAL OPPORTUNITY FOR ALL."

The supervision of the sale of hunting, fishing, and trapping licenses is a cooperation-size job which amounted to $1,314,838 in the past fiscal year.

PROTECTOR OF THE MONTH



Raymond C. Ramsey

Mr. Raymond C. Ramsey was employed as a Wildlife Protector in Madison County on February 1, 1947, and played a large part in the establishment of the Rich-Laurel Wildlife Management Area in that county.

An avid hunter, Mr. Ramsey trains his own dogs and is considered one of the best skeet shots in North Carolina. He is a graduate of Mars Hill High School, is now married and has three children, two boys and one girl.

Enforcement Record For July

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of July, 1954:

Persons checked	**30,982**
Prosecutions	**588**
Convictions	**531**

A total of $2,945.00 in fines was collected and paid into the school funds of the counties in which the convictions were obtained. Fines were not collected, being either suspended or not levied, in 57.81% of the total number of convictions.

It's The Law!

Question: Does the purchase of a hunting license entitle the holder to hunt on any land which is not posted?

Answer: No. Whether the land is posted or not, the law requires the hunter to obtain the permission of the owner before going thereon to hunt.

Question: What are the hunting license requirements for a non-resident serviceman who is stationed in North Carolina?

Answer: Our law provides that any serviceman who is stationed at a military facility in this State may use a resident hunting license.

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NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Commission Sets Hearing Date for 1955 Fishing Season

Three important public hearings are scheduled by the Wildlife Resources Commission during October. In past years the Commission has held only one meeting, in Raleigh, to give anglers an opportunity to express their opinions on how the fishing regulations should be set up. This year, however, at the request of sportsmen's organizations, a hearing will be held in Asheville on October 20 in the Council Room of Buncombe County Courthouse. On October 22 a meeting will be held in Raleigh in the Hall of the House of Representatives, and the third meeting will be in Charlotte on October 25 at the Hotel Charlotte. All meetings are scheduled for 10 A. M.

* * * *

North Carolina Outdoor Writers Association Organized

Nearly thirty Tar Heel outdoor columnists, photographers, radio-TV outdoorsmen, and artists joined forces late in September to organize into a group to share ideas, information, and fellowship. The NCOWA group held its first meeting in Morehead City as guests of that city's chamber of commerce. The avowed purpose of the association is "To make North Carolina the greatest outdoor recreation state in the nation." Membership is limited to persons who disseminate information on hunting, fishing, vacationing, and conservation of natural resources.

* * * *

1954-1955 Waterfowl Seasons Set

The U. S. Fish and Wildlife Service has officially announced dates and bag limits for North Carolina waterfowl shooting. The duck and goose season opens at noon on November 10 and runs through January 8, with a daily bag of four ducks and two geese allowed, and a bag limit of eight ducks and four geese permitted. Acting on the desires of a majority of wildfowlers, the Wildlife Commission requested, and was granted, shooting hours from one-half hour before sunrise to sunset. In preparation for the season, applications for blinds at Lake Mattamuskeet are already coming in to L. B. Tunnel, Refuge Protector, New Holland, N. C.

WHAM! and the deer scamper

Photo Feature by Jack Dermid

Commission Personnel are Experimenting with a New Method for Controlling the Crop Depredations of Wildlife

It was a still and peaceful night in A
filled the forests of Uwharrie Wildlif

WHAM!

Ollie Thompson, refuge manag
within the refuge and paid little att
second explosion occurred from a
question him, Ollie explained, ". .
deer out of milo and pea fields."

Every year the Wildlife Resourc
farmers about crop depredations of
Complaints come from local areas of
but the largest portion are received fr
and peanut fields to their liking, wh
where geese have rooted up newly
Uwharrie Refuge, deer have fed on
damage is not extensive or important
landowner whose crop is at stake, it

Commission biologists and wild
depredation and offer suggestions for
resulted in both success and failure a
example, chemical repellents for dee
is expensive and must be re-applied f
Other methods have been the buildin
cans attached, stringing cresoted rop
electric fences, and even the leashin
barking. With raccoon and bear, cont
successful. It has been difficult to finc

At the suggestion of the Fish

Firecracker rope is easy to use and requires little advance preparation. Here Ollie Thompson (right), refuge manager at Uwharrie, shows F. W. Morton, Route 1, Troy, how to position the rope over a pea field.

**This close-up taken
the severity of deer**

**Deer find the ripeni
and do a thorough
Tracks of running
near Uwharrie, but
sary to test the rope**

moon, rising behind scudding clouds, nt Area with luminosity.

re trying to get photographs of deer e distant noise. In a few minutes, a ction. Then a third. Before I could ots, but firecrackers used to frighten

on receives numerous complaints from raccoon, and other forms of wildlife. dance from various parts of the State, l Plain where deer have found soybean d raccoon have raided cornfields, and er pastures. In croplands surrounding f ripening milo and other crops. The lture as a whole; but to the individual problem.

's always investigate instances of crop hem. In the past, the suggestions have en required much time and work. For used with limited success. The spray time if new growth is to be protected. ws, tying strings across fields with tin ld borders with white flags attached, d where it will frighten off game by g and hunting have not always proved tion to the crop depredation problem. Service, Commission personnel have been experimenting with a new control method: firecracker rope. It has been used with success in western states for the control of waterfowl damage. What effect the rope will have on game in North Carolina is not yet known. Preliminary experiments indicate that it may be effective where deer, bear, and waterfowl are concerned, but it is not likely to trouble the bolder raccoon too much.

Firecracker rope is simply a piece of chemically treated hemp rope with twelve firecrackers spaced along it. The rope is designed to burn slowly with the firecrackers exploding about thirty minutes apart to frighten away feeding wildlife. Each rope burns six hours; so one lit before dark and another lit about midnight will give overnight protection for several acres. In larger fields, several ropes can be placed in strategic locations and lit five or ten minutes apart to give alternating explosions and increased effectiveness.

Firecracker ropes are inexpensive compared to other methods of control. They are easy to use and do not have to be burned every night. Field crops are not susceptible to damage at all times during their growth. For example, deer damage soybean fields primarily when the new sprouts are two weeks old or less and milo during the period the heads are ripening. Bear raid cornfields mostly while the corn is in the milk stage. It is only during these critical times that firecracker ropes are really needed. Then they can be burned two or three nights in succession to give the offenders a good scare—then used every other night or so as needed to give effective results.

It is too soon to say how good the firecracker rope is for controlling game depredations. Biologist Ben James reports good results with bear in Pamlico County, and Ollie Thompson has seen tracks left by running deer in their hasty exit from milo fields.

After the results have been evaluated and if the firecracker rope proves successful, the Commission plans to make it available to landowners needing protection. Or landowners may purchase the rope directly from the manufacturers.

But wildlife is unpredictable. Experiments may prove bear and deer become educated and "laugh" at the explosions. It is hoped, however, the firecracker rope will be the long-needed solution to part of our crop depredation problems.

pea patch shows

nilo excellent fare ing off the seeds. ound in this field iments are neces-

WHAM! Here is what deer and other wildlife see when the firecrackers explode—an actual night photograph. The ropes are lit at the bottom and burn slowly for six hours with firecrackers spaced to explode every thirty minutes.

School Page

WONDER OF MIGRATION

by Lunette Barber

October's bright blue weather is here—a glorious season of the year and time of harvest, but in the animal world we think of migration. What is going where?

If geography is a dull subject in your schoolroom and should be livened up a bit, how about stimulating interest and learning by integrating wildlife conservation into the subject and beginning with migration. First obtain a good world map. Let's not begin with birds because we too often disregard the most scientific achievement of the first quarter of this century. The map is on the wall; find the Sargasso Sea; what about it? It is a large tract of water in the North Atlantic Ocean so named from the floating seaweed there. It may be considered to lie between the parallels 20° - 35° N. and the meridians 30° - 70° W. According to song and story the Sargasso Sea is where abandoned ships drift in a sad circle of their companions until they sink quietly beneath the waves. Actually it is a vast whirlpool surrounded by ocean currents including the Gulf Stream.

The scientific achievement mentioned above was determined by a Dane named Johannes Schmidt. He found, after years of hard study, that fresh-water eels live in fresh water and in autumn the adults go to salt water, the Sargasso Sea, to spawn and there they die. They never breed in fresh water. So it may be seen that the eel's life-cycle is the reverse of some of the other fish such as the shad and striped bass (rockfish).

Now look on a map of North Carolina and locate the Roanoke River. A choice salt-water fish, the striped bass, comes from the ocean and spawns in this river. The North Carolina Wildlife Resources Commission helps out the spawning program by operating the only striped bass hatchery in the world at Weldon. There the eggs are hatched and the fry removed to the river where they travel to the salt water. The next nearest rockfish spawning ground is the upper Chesapeake Bay. On the same map a short distance south, locate the Neuse River. In it another very much desired salt-water fish comes to spawn—the shad. They too return to salt water.

Some mammals migrate, but not very many in this state. The only flying mammal, the bat, is the outstanding migrant in North Carolina. Perhaps one of the most interesting migratory mammals is not found here; therefore, we will now find the Bering Sea. Between the parallels 55° - 60° N. and the meridian 170° W. are the Pribilof Islands. Here are found fur seals that are noted for the great range of their migration. The full-grown males, or bulls, remain in the polar regions the year-round, but the females and the young males migrate in winter almost to sub-tropical waters. The North Pacific herds to as far South as 30° N. latitude. In spring they go North for the summer breeding season.

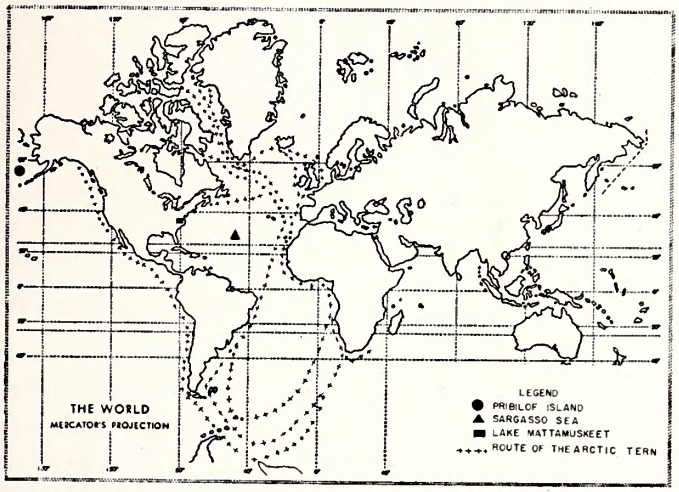
Who does not get a thrill to see a living creature as beautiful as the monarch butterfly? They too become migratory conscious with the seasons' changes. Each fall some of this species fly South, and many of them may make the return trip of 1,000 miles or so in the following spring.

Have you missed the presence of any of your summer visitors, friends, or neighbors? Where did your smallest bird, the hummingbird, go? Most of the ruby-throats from as far away as Alaska winter in southern Mexico or Central America. Then if a very interesting and valuable little bird, the chimney swift, built a nest and reared its young in your chimney this summer, it will return this fall to the region of the Andes in Ecuador and Peru to spend the winter. But the "globe trotter" is the arctic tern. This bird's route is unique. It is the only species known to breed abundantly in North America and to cross the Atlantic Ocean to and from the Old World, glimpsing four continents. Evidently the arctic tern enjoys more hours of daylight than any other creature in the world—nesting in the Arctic region

and wintering in the Antarctic. Marvelous! Isn't it? Its speedometer registers 25,000 miles per year.

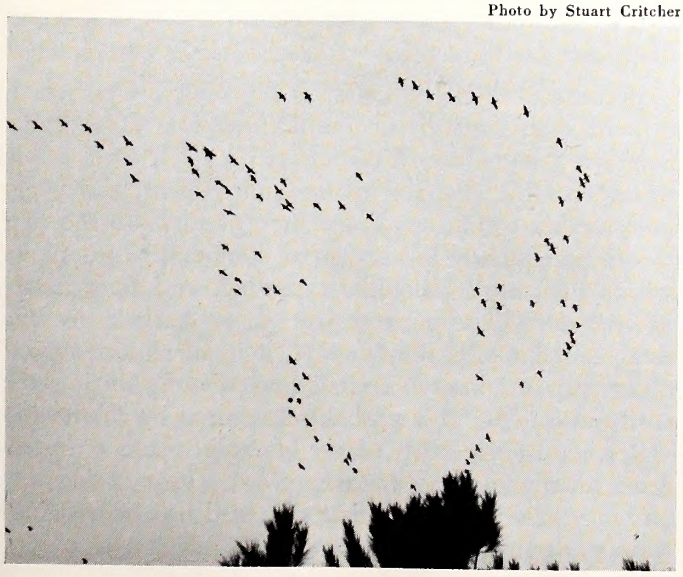
We read, write, think about, and see migrants, but perhaps the most popular, best-loved, and conspicuous is the Canada goose. How easy and fascinating to watch flocks of them come into North Carolina each fall. Find Lake Mattamuskeet — North Carolina's most popular "Goose Inn," under the management of the U. S. Fish and Wildlife Service, Department of the Interior. Approximately 70,000 came there to winter last year. Nothing known or written is more fascinating or fabulous than the life history of the Canada goose. The poet, artist, writer, photographer, ornithologist, sportsman, and observer will agree that it is one of the greatest "objects of Nature."

Any time the geography lesson needs a little pepper and spice, try seasoning it with a bit of migration study. Teach the flyways—Atlantic, Mississippi, Central, and Pacific. You will be happy; the children will be happy; and the birds, mammals, fish, butterflies, and other creatures do not object if you take imaginary trips with them. Know them, and have a desire to conserve them.



Examples of migration described in the text can be located on this world map. Below, Canada geese are perhaps the most conspicuous migrants found in North Carolina.

Photo by Stuart Critcher



Annual Meeting

North Carolina Wildlife Federation

The annual meeting of the North Carolina Wildlife Federation will be held October 1-2 at the Robert E. Lee Hotel in Winston-Salem.

A highlight of the event will be the Friday evening banquet at 7 p. m. with Senator Sam Erwin, Jr., a long-time friend of conservation, as the chief speaker.

Friday morning will be devoted to registration, followed by a director's luncheon at noon. Business meetings and a tour of Winston-Salem for wives will be held in the afternoon.

The program for Saturday morning includes business meetings and an address by Charles Callison, Conservation Director of the National Wildlife Federation. A large attendance of federation members is expected as well as representatives of the Wildlife Resources Commission and delegates from the Wildlife Federations of South Carolina, Virginia, and West Virginia.

This prayer was used in opening Wilkes County Wildlife Club, January 27, 1954

"In this confused world our Heavenly Father, help us to be still and know Thou art God. Help us to realize we are masters of nothing, just stewards of Thine. Help us to be good stewards that we may be drawn closer to Thee and feel the warmth of Thy love and the power of Thy Holy Spirit. Help us to purge our hearts of all sin, sin of hate, sin of greed, sin of selfishness, sin of laziness and every little old sin that tends to drag us down. Help us to lift ourselves up, Our Heavenly Father, that we may look through eyes of love and behold the beauty of Thy creation, the sun, moon and stars, the rain, the oceans and mountains, the forests, fields and streams, and the fruits of the earth. We realize that we brought nothing into the world, nor can we take anything out. We came from the earth and to the earth we must return. What counts is what we do while we are in the flesh during our sojourn on the earth. We realize that we have not been good stewards with what we have been entrusted with. By our acts your soil has been washed and depleted of its fertility, your pure streams have been polluted and many cases your forest wasted. Forgive us Our Heavenly Father for all of our misdoings, help us to see how to correct this evil and give us a desire to do it and may we do it for Thy Glory and for the sake of Him who taught us how to pray."

GIZZARD SHAD

by J. H. Cornell

The gizzard shad is important to sport fishermen, even though the fish may never take a baited hook. In some waters it is a pest, and competes with the game fish for food. In others it is most desirable, and as a forage fish provides food for the game species. It is known by a variety of names in the various parts of its range. It is variously known as the hickory shad, mud shad, nanny shad, and skipjack. Since all of these terms, in some localities, refer to other fish, the common name "gizzard shad" is generally accepted.

This fish is closely related to the members of the shad family which live in salt water but come into fresh water to spawn. The gizzard shad, however, lives its entire life's cycle in fresh water. Its common name is derived from the structure of its stomach which is round and muscular like a chicken's gizzard, and appears to be designed for crushing and mixing organic matter from which its nourishment is obtained. Its generic name, *Dorosoma,* literally means "lance-bodied." The specific name, *cepedianum,* honors the French naturalist, Count Lacepede, who was a pioneer in the scientific study of fishes.

This species usually reaches a length of less than twelve inches. It is silvery in color and bluish above. The young have a large dark spot behind the gill cover. The single dorsal fin has twelve rays, and is unusual in that the last ray is considerably extended like that of a Tarpon.

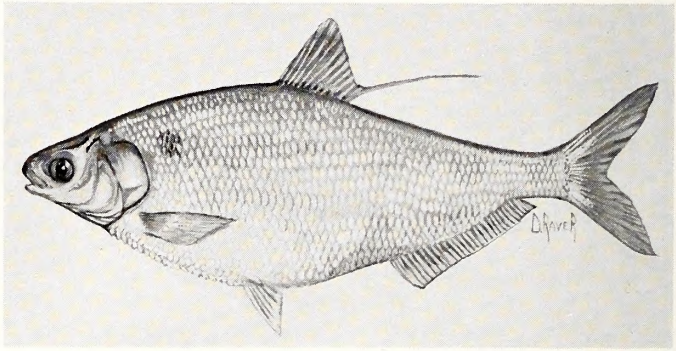
Habitat

Gizzard shad occur naturally throughout the Mississippi Valley, particularly in the lower and more heavily silted part. They live mainly on food derived from the muddy bottoms of the rivers and lakes, digesting organic material that abounds in the mud. The gill rakers are very slender and exceedingly numerous in order to strain out the finely divided food particles from the water. The surface of the digestive tract is highly developed and the alimentary canal is long to provide adequate digestive surface. This is unlike the carniverous fish or mammals which have short digestive tracts. It seems characteristic of the meat eaters to have much shorter alimentary canals than the vegetarians.

The gizzard shad has been introduced in many waters of the Atlantic drainage, and occurs in streams tributary to the Gulf of Mexico as far south as Mexico. By means of connecting canals from the Mississippi River System, it has made its way into Lake Erie and Lake Michigan.

Life History

Although little is known of its spawning habits in North Carolina, the gizzard shad is reported as spawning in the Illinois River in May. Although no records are given, this probably indicates a spawning temperature of 60 degrees or slightly above. The young feed principally on animal plankton, and at this stage of their life compete with young game fish present in the same waters. As they develop, their food preference changes to vegetable matter. The structure of the digestive system changes accordingly and provides for the digestion of the preferred food.



Sketch by Duane Raver

Gizzard shad. Note that the last ray of the dorsal fin is considerably extended like that of a tarpon.

The growth rate of the gizzard shad, as in all other species, depends principally on the available food supply. Where the growing season is long and food is plentiful, they rapidly grow beyond the size range wherein they are useful in providing forage for the game species such as bass and walleyes. In less productive waters they comprise an important part of the diet of predatory fishes.

Because of their tremendous reproductive potential, gizzard shad tend to become dominant in a favorable habitat. Fortunately, they are particularly susceptible to unfavorable changes in the environment, and when unfavorable conditions occur they usually are the first to die—frequently in very large numbers. In reservoirs where they have become established, and particularly in the deep storage reservoirs characterized by the establishment of a thermocline, it is an almost annual occurrence to observe tremendous die-offs during the spring turnover. This probably is caused by changes in water conditions, particularly of oxygen and temperature, when the turnover takes place. These spring die-offs may be so extensive that the dead fish lie in windrows along the shore.

Although observers are frequently filled with consternation at such a sight, it is likely that the result is beneficial to the populations of other fish in the reservoirs concerned. Such die-offs can reduce food competition among the remaining species and provide for better growth rates of the more desirable ones. Adequate numbers of gizzard shad seem always to remain to perpetuate their kind.

Importance

Although gizzard shad are occasionally used as human food, they are not considered a delicacy. The flesh is of poor quality and is filled with numerous small bones. Their greatest value to the sport fisherman is that they serve as forage for the carniverous game fishes. Only the young are useful as forage. In waters which provide a particularly favorable habitat, they tend to grow quickly to such a size that only extremely large game fish can feed on them. In these situations they frequently are detrimental to game fish populations by competing with young game fish for the available food supply; thus serving no useful purpose to the fisherman or the fish populations.

In less desirable habitats, such as deep and rocky reservoirs where the supply of vegetable matter is limited, their growth rate may be very slow. In these situations they tend to remain longer at a size where they serve as forage for game fish and may constitute the most practical means of converting unused food materials into a forage fish for the game species. As a matter of fish management, great caution must be used in introducing gizzard shad into new waters. Under some conditions they may provide for much better crops of game fish; but if the habitat is very favorable for them, they may become so numerous that they actually are detrimental. One eminent fisheries biologist neatly summed up this situation by saying that if the watershed of a reservoir will grow corn stalks bigger around than a person's finger, then the water is too rich to introduce gizzard shad. This might be a good rule of finger to follow in North Carolina.

Waters containing large numbers of gizzard shad frequently have excellent game fish populations of little use to the sportsman. The game fish remain so well fed that they are extremely difficult to catch. The anglers have solved this problem to some extent by not bothering to cast hopefully along the shorelines. Instead, they wait until they observe hungry game fish feeding on the schools of shad.

Shad usually travel in schools near the surface. When a hungry bass comes up under the school to catch its dinner, the shad make a great commotion on the surface of the water and frequently jump into the air in their efforts to escape. The observant fisherman, in a boat with a fast motor, can hurry to the spot and cast his plug into the school of shad. When the plug sinks a few feet and is brought to life, the hungry bass frequently take the plug, apparently in the belief it is one of the school of shad. This is called "fishing the jumps" and is often the only productive way to catch game fish in a lake where a large gizzard shad population exists.

In some states where the species is overabundant, commercial fishermen take large numbers of them in their nets but usually throw them aside in favor of more desirable species. Where their numbers warrant it, it would seem that they would have some commercial value in the preparation of oils, fertilizers, and fish meal. As a means of improving such waters for the successful harvest of game fish, it might be that the development of such a commercial enterprise could be of importance and benefit to the sport fishery.

DISTRICT EIGHT

from page 5

creasing population and corresponding increase in hunters, every available acre is needed to grow a bigger game crop for the army of Tarheel hunters.

Anyone who is interested in increasing the game supply on his land can receive aid by calling on his local Work Unit Conservationist of the Soil Conservation Service, or the County Agent, or the Wildlife Resources Commission's district biologists (yours truly). Their advice is cheerfully given, along with applications for planting stock to improve game food and cover. In this district, as in the others, the supply of rabbits and quail depends on the amount of land available to produce it. So why not help by making more land fit to produce a bigger crop of game.

In this brief article we have visited points of wildlife interest in the Eighth Commission District. Maybe you live here, or maybe you have visited this area. In either case, you will surely agree that it is a district of contrast, with a wide range of wildlife and a tremendous potential of wildlife production concentrated into a relatively small area.

Public Hearings On 1955 Fishing Regulations

October 20
Asheville, Council Room of Buncombe County Courthouse—10 A. M.

October 22
Raleigh, Hall of House of Representatives—10 A. M.

October 25
Charlotte, Hotel Charlotte—10 A. M.

Dear Joe

Joe is not one individual. He is a sort of composite of all the sportsmen of North Carolina. Joe goes hunting and fishing as much as time will permit, and questions frequently arise in his mind about the wildlife on his favorite stamping grounds. Sometimes he cannot answer these questions himself; so he writes the Wildlife Resources Commission. These letters are our answers to Joe.

JOE DOAKS

Wildlife Resources Commission
Raleigh, N. C.

Gentlemen:

What About These Managed Hunts?

Very Truly Yours,

Joe Doaks

Many of you are already familiar with the daily permit system used for the past two years with notable success on Standing Indian, Rich Laurel, Wayah Bald, Fires Creek, Sherwood, and Santeetlah. The same system is now about to be extended to Pisgah, Mt. Mitchell, Daniel Boone, and Uwharrie with further streamlining to accommodate hunters in a more efficient manner.

All of you are doubtless familiar with the complications and inadequacies of the old system wherein applications and fees had to be filed far in advance, public drawings held to determine successful applicants, and the great difficulty in equitably arranging changes for those who found that they could not hunt on the dates they drew.

Due to the limited hunting facilities in the early part of our program, this drawing system was necessary in order to dole out such accommodations as were available. During the past few years, however, notable strides have been made in the big game program with the hope of eventually lifting restrictions and allowing greater freedom of choice for the hunter.

The program is now starting to pay off. Several new areas have been established and stocked and starting this fall one new area will be opened to hunting each year for the next several years. At the same time improvements have been carried out on the older areas which have resulted in larger populations of game and improved access facilities to get to this game.

On the areas open to hunting this fall, a total of 335 acres has been planted to pasture in patches of one-fourth to five acres. A total of about 1,200 acres has been "browse cut"; that is, weed trees and shrubs cut in such a manner as to make more food available to deer in the form of sprouts and seedlings. Other browse cuts are in the form of lanes which, at the same time, serve as trails to lead the hunter back to where the game can be found. These lanes aggregate about 110 miles in total length. In addition, the Forest Service has modified its timber cutting to provide more of this type of food in a well-distributed pattern over the areas. Furthermore, a total of about 250 salt stands has been established to help hold the deer on the areas.

All of these practices have helped to build up the deer herd to an all-time high. You have experienced the benefits of this work with record kills last year and the year before. It is true that abundant mast crops have also been very important in this population build-up, but we feel confident that with all the supplementary improvements above mentioned the herds will not again drop back to the low populations of the 1940's.

Some of this population increase is also due to new aids in protection. Ten two-way radios have been provided the refuge protectors and six more are on order. These have proven most helpful in controlling illegal hunting, thereby making more game available for the law-abiding sportsman. Nine new bloodhounds are also proving to be a strong deterrent to would-be violators.

Extension of the daily permit system does not mean the flooding of areas with hunters nor the abandonment of control over distribution. On the contrary, quotas will be retained and adhered to not only on the checking station level, but also at the hunting compartment level. In the past, parts of some of the areas were relatively inaccessible and had very few hunters. New roads and trails have been built into these compartments, thus allowing space for more hunters, and overall quotas have been increased accordingly. These quotas were computed on the basis of about 70 to 80 acres per hunter and this distribution has been found to be entirely adequate in the past.

Other measures have also been taken to provide for more uniform distribution and to prevent excessive crowding. The deer season will open on the same date in all of central and western North Carolina. This

means that hunters will have a first day choice of Camp Butner, Uwharrie, and the Alleghany-Surry county area, in addition to all the open territory outside and inside the western management areas. To this extent our program has been successful in bringing hunting closer to the hunter and reducing travel time to hunting areas.

It is possible that in spite of these measures applicants may exceed the quota at one or two checking stations on the first day or two of the season. However, both sides of Pisgah will be open simultaneously, thus more than doubling the daily quota, and in the past only one checking station on Mt. Mitchell and only one on Daniel Boone has been oversubscribed. Both of these have additional checking stations where accommodations will no doubt be available.

To guard against the necessity of turning anyone away on the first day or two, all checking stations will be in radio and telephone contact in order to inform hunters of undersubscribed areas. For those who have no particular preference, it might be wise to schedule hunting for the middle of the week and thus not contribute to the initial rush.

Checking in will be further streamlined this year. The hunters will line up in their cars and drive past the checking stations single file. Each will be issued a numbered ticket to correspond to his compartment and date of hunt. The details of filling out the name, address, etc., of the hunter will be done by the checking station attendant after all the hunters have checked in. Checking out will consist of returning the numbered ticket for the hunting license at which time the checking station attendant will check the personal description of the licensee for identification purposes. It is expected that this system will cut check-in time by at least 25%.

Another aid to be provided the hunter will be a map of his assigned compartment showing roads, trails, streams, browse cuts, hunting lanes, and pasture plantings. This should not only help the hunter move about with more assurance of his area, but also assist in finding a good stand, selecting a hunting route, or organizing a drive, and in making a kill.

We appreciate very much the concern that has been expressed by some in regard to the proposed changes. They may in a few instances cause some inconvenience, but we believe that the over-all effect will be a great improvement. Such slight inconvenience as may result, we should like to consider as "growing pains," for truly the program has advanced much during the past few years and, with the continued support and cooperation of all concerned, it should make even more growth in the future.

Any suggestions for further improvement will be greatly appreciated.

Sincerely,
Frank B. Barick
Chief, Game Division

Fishing Access Area Dedicated on Cape Fear River

Despite a heavy thunderstorm, the dedication of the Avents Ferry Bridge Fishing Access Area on the Cape Fear River near Moncure last August 17 was well attended.

The picnic shelter served as the speaker's rostrum, and over a hundred wildlife club members and interested sportsmen crowded under it to hear Gov. William B. Umstead give the principal address. Other speakers included Clyde P. Patton, executive director of the Wildlife Commission, S. I. Stewart, president of the North Carolina Wildlife Federation, and R. T. Meares, president of Lee County Wildlife Club.

The access area is composed of an easy approach to the river from the highway, an acre of surfaced parking space, a club-sized picnic shelter and fireplace, and a ramp for easy launching of boats. It was completed through the cooperative efforts of the Wildlife Resources Commission, Lee County Wildlife Club, and Highway Commission.

The completion of the Avents Ferry Bridge Access Area is another step in the Wildlife Commission's long-range program of providing fishermen with free approach to good fishing waters throughout the State. To date, ten areas have been developed and are in use, with nearly twice the number of additional areas acquired for future development.

from page 7

Since the program of planting bicolor lespedeza began, enough has been planted in the Tar Heel State to make a strip fifteen feet wide stretching from Cape Hatteras well across the border of California. As with other types of game, stray dogs and prowling house cats take a toll of quail, and there would be more of these birds for the harvest if the activities of feral pets were curtailed.

The bobwhite quail is truly a harvestable crop. Given good cover and food, he produces his kind abundantly. Coveys may be harvested as much as 75 per cent and still have enough birds remaining to grow to abundance the following year.

Wild Turkey

The traditional Thanksgiving bird will be abundant nowhere in the 1954-55 season. Turkeys have responded somewhat to management practices, and it is likely that without management and careful protection the season on wild turkeys would have had to be closed entirely to allow the species to survive. Turkey hunters are few, however, compared to the thousands of people who hunt for quail, rabbits, or squirrels. Most successful turkey hunters are old-timers at the sport, although other hunters do take them occasionally in connection with hunting other game. Only by proper management and careful protection can turkey hunting be perpetuated as a popular sport in North Carolina. The late spring and attending late frosts apparently affected turkey production this year. There will be fewer young of the year available for harvest this fall, but reduced production is not considered to be serious.

Ruffed Grouse

The ruffed grouse is one of a very few species for which more people are encouraged to hunt. Biologists have learned that North Carolina produces enough grouse to permit a great deal more hunting. Birds which do not fall to the gun die of old age, disease, or predation. These same birds could provide excellent, if rigorous, sport. Grouse are restricted almost exclusively to the mountain counties, although future plans call for establishing them in certain foothill areas.

As in the case of quail and turkeys, grouse were to some degree adversely affected by cold weather last spring, and there will probably be fewer birds of this year's crop for the hunters' bags this fall. It is doubtful, however, that shortages will be noticed except in local areas where frosts were later and more severe.

Grouse hunting involves mountain climbing and crawling through dense thickets. This may be one reason why there are not more grouse hunters. To the man who has experienced the thrill of making a clean hit-or-miss on a grouse whirring out of a covert, there is no more enjoyable sport.

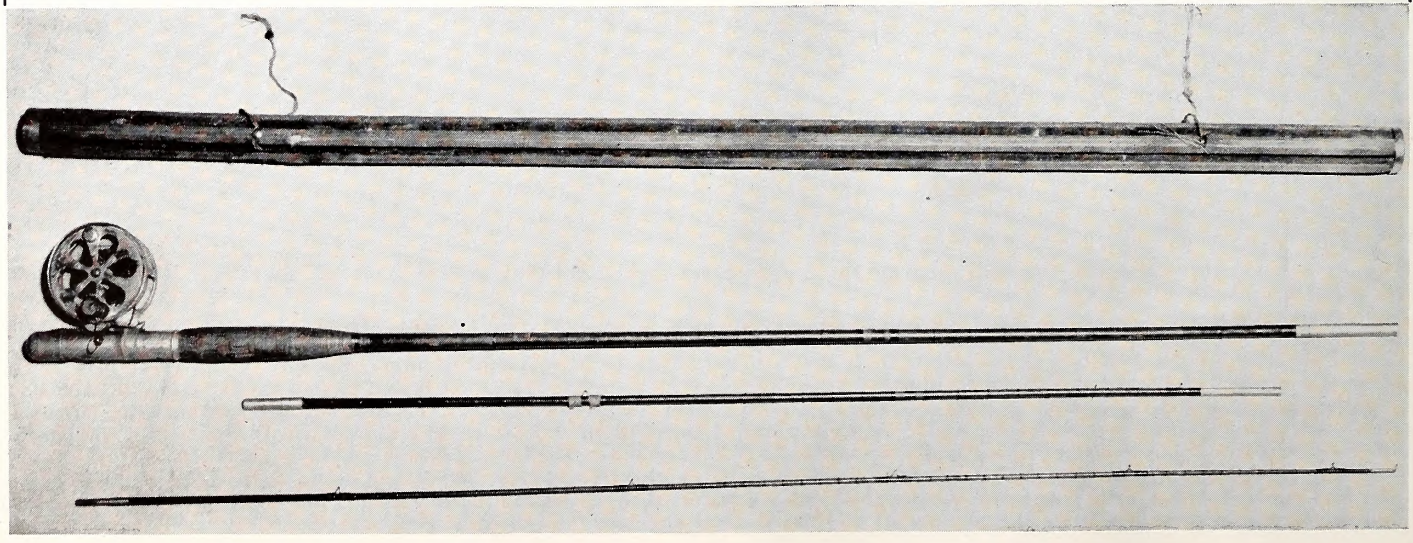
The outlook for hunting in the 1954-55 is good. Hunters should remember, however, that the number of gunners increases each year. This means that as time goes on there will be less game to be divided among more people even with the most successful wildlife management program. They should remember, too, that hunting is a sport to be played according to the rules. Violations of the rules result in arrest and prosecution. The rules apply to property rights and trespass.

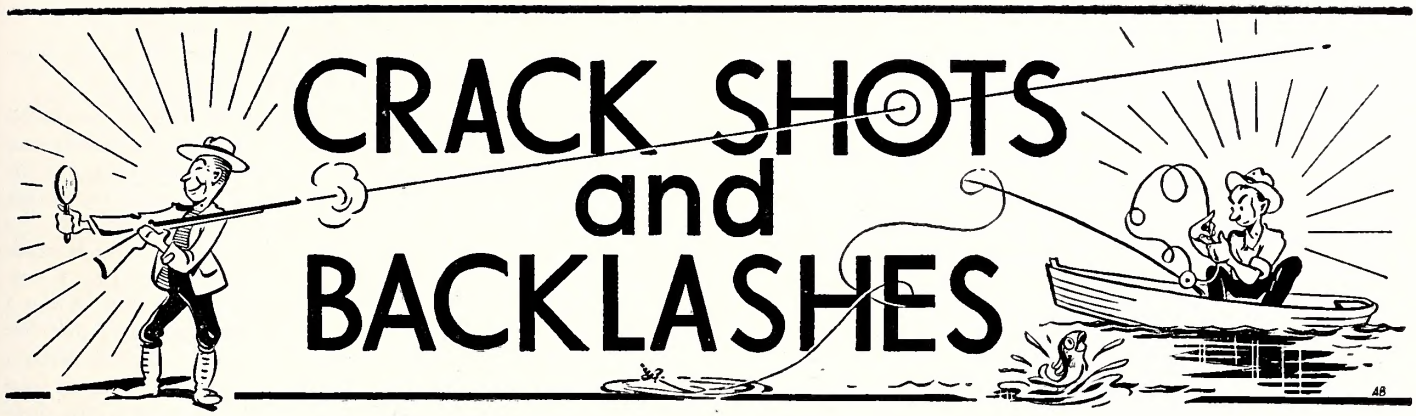
Above all, more hunters mean a greater chance of hunting accidents. Remember that hunting accidents don't just happen: They are caused. Hunting is only for the cautious, the courteous, and the careful.

OLDEST FLYROD?

This is perhaps the oldest flyrod *still in use* in North Carolina. It is owned by R. Ion Lowndes of Flat Rock and was custom-made for him 62 years ago from the wood of the Bethabarra tree, which grows in the valley of the River Jordan. The rod is very light and strong. The rod has been broken only once during all its years of use. A borrower tried to horse in a big bass and broke the middle section, but this was repaired.

Photo by Luther Partin





DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

The waterfowl season, which in normal years opens with little noise other than the blast of shotguns, this year came in for more publicity than usual. As in years past the U. S. Fish and Wildlife Service sent suggest dates and bag limits to the Wildlife Commission with certain alternatives as to dates, shooting hours and other regulations. This year the state was given a choice of shooting hours, either from sunrise to sunset or sunrise to one hour before sunset. In view of the high incidence of cripple losses last year when the hours were set to close at sundown, the waterfowl committee of the Commission proposed going back to the one hour before sunset closing this year. Most guides and other caterers in the eastern shooting grounds favored this. But not the hunters. As a result of strong expressions of opinion from all quarters of the state, and because our neighbor states Virginia and South Carolina chose the sundown alternative, North Carolina will have waterfowl shooting until sundown. The season will run from November 10 through January 8 with the same bag limit as last year.

Bag limits came in for criticism by sportsmen and game managers alike. In New Jersey and states to the northeast, the Service allows a bonus of four ducks daily and eight in possession so that the official bag there will be eight and sixteen, with a proviso that at least half of the limit shall be scaup or bluebills, instead of the four and eight limit in states south of New Jersey. Tar Heel gunners and game authorities insist that scaup are just as numerous in Pamlico and other sounds as they are in northern states, and that the ruling is discriminatory.

Under the section of this issue devoted to "Dear Joe": is a complete explanation of the new system for conducting managed hunts on the western National Forest lands. If you plan to get in on some of these hunts you will be glad to know that advance applications, public drawings, and other complications have been eliminated. You have only to swap your hunting license at a checking station, plus a couple of bucks for a ticket to hunt.

This question is a lulu. As far as we have been able to determine, there is no law protecting sea turtles, although this fabulous creature should come under rigid rules to protect it. These reptiles, by the way, are the only turtles known to have voices. At mating time they bellow like Hereford bulls, more or less:

"Dear Sir:

"Recently when I was on vacation at Holden's Beach, North Carolina I was fishing in the Inland Waterways. A gentleman next to me hooked a turtle and pulled it in. He layed the turtle on the dock and while he had gone to the drink stand some kids on the dock began cutting on the turtle. When he came back he asked where the turtle was and a woman cleaning shrimp told him that it was a $500 fine to kill a salt water turtle and that she had sent for the Police. The Police hadn't arrived when I left, but since that time I have been thinking about what she said. Would you please enlighten me on whether or not there is or ever was a law in North Carolina of that nature.

J. C. Ray, Jr.
Hillsboro, N. C."

* * * *

Senator Hawley Poole, West End, N. C., has an interesting bird on his premises. We regret that we didn't get a picture of it:

"I saw yesterday on my premises here in a covey of three-fourths grown quail one as white as a Leghorn chicken. If you doubt this, get here with a camera before something destroys it and I will always be listed as a liar."

We didn't get the picture, but we are willing to accept the Senator at his word. Albino quail are uncommon, but not especially rare.

* * * *

Maxine McMasters who writes interestingly about unique household pets favors us with another of her anecdotes, this time about a rabbit whose name is not Harvey:

"Dear Sir:

In reply to your note of June 30, 1954, concerning our pet rabbit. No, his (?) name was not Harvey, but "Sun-

day." However, when Mac (my husband) or I tell this little story, people set their drinks down and smile a knowing smile. One of the chaplain's assistants at the Station Nursery Kindergarten gave Sunday to the children after an Easter party. He was a tiny little furry thing, mysteriously marked, being neither white domestic nor brown wild rabbit, but part of both, with brown eyes, brown feet, brown nose and white whiskers with a white body.

As I worked part time at the nursery I considered myself rather busy for caring for a rabbit and living in a military housing unit I pondered the legality of it all, but being soft hearted where children and small animals are concerned, I took him home and put him in a large wooden box under the library table in the hall. With an ample supply of paper in the box and hoping for the best. I will not say that I house-broke that little rodent. He did it himself. Not only to the paper in the box, but to our surprise started using a newspaper left on the bathroom floor and as long as there was a paper there, used it. This in itself was enough to make a long conversation out of but Sunday proved to be much more surprising and of his more interesting accomplishments was his choice of diet.

He would turn a carrot down for a pork chop bone. I smile now to remember how he sat up on his haunches by the table and begged for food, with his forepaws together almost in a supplicatory pose. He loved vanilla wafers, fudge candy, drank milk, ate bacon and being a rabbit enjoyed his afternoon "Clover Run." I have been teased many times for sitting out in the yard with my nurses uniform on waiting for Sunday to finish his feast in the clover. Sunday may have been a gift to my children, but he became more of a pet to Mac and me than the children. He ignored the children. He would sit very still and rabbitlike when they petted him, immobile and frightened, but how he loved Mac! I don't think Mac ever came in and sat down that Sunday wasn't in his lap. Having never lived with a rabbit before nor since, the children took him for granted and the antics were not special to them. Sunday loved the labels off beer bottles. He was a source of constant amusement to our friends. Some came doubting but went away laughing and returned with Hershey kisses for Sunday.

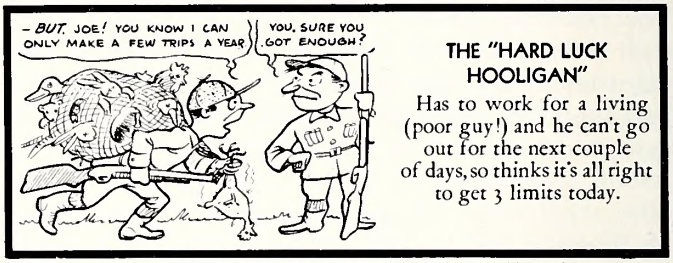
When Mac stretched out on the divan for a bit of Saturday Evening Post, Sunday would leap onto his lap and wait to be petted. If he wasn't, then off came the cover of the Post. Many a Norman Rockwell was partially consumed by Sunday and we soon learned not to leave an open book around. I never knew that rabbits could do a 180 in mid air. I never knew a lot about rabbits at all, I guess. One afternoon late, Sunday was nibbling in the clover down by the edge of a wooded section and looked up into the face of a large brown rabbit. I thought my little conversation piece would leave us right then, but Sunday was very frightened by the monster, and came bounding into my lap, trembling and shaken.

He was a constant source of frustration to Bootsie, our neighbor's dog. And sometimes the neighbors "borrowed" Sunday for a few minutes when they had company and how Bootsie would growl and bark outside the door. One weekend I had invited a couple and their children to a turkey dinner and spent much time on cooking, cleaning, arranging, etc. The children and I went down into the woods and gathered a large bouquet of wild wisteria. It looked beautiful in a low bowl on the coffee table and was an attractive touch to the room. Then off we went to pick up Mac. When we returned there in the middle of the table sat the bowl, with Sunday drinking water out of it. Not one stem, blossom, or leaf remained. But he wasn't too full, for after dinner he hopped off with a turkey bone to his box to gnaw.

Sunday lived with us for five months. When we moved into new quarters, there were no rugs on the floors and Sunday couldn't run and play; he sat disconsolate on his favorite chair and seemed to mope. There were no woods nearby with fresh clover to romp in, and there was a dog. A new neighbor owned a large boxer, which came in with the children unknown, and by the time I rescued Sunday he was a quivering handful of fur. When I returned from work the next day my pride and joy was dead. He was buried in the edge of the woods with a large attendance of our old neighborhood children and a couple of grown ups. I didn't go. I was on night duty at the Navy Hospital then and had to sleep. Besides, who wants their children seeing their mother crying over a dead rabbit?

Maxine S. McMasters"

GAME HOGS YOU MAY KNOW . . . . *by Jack Mitchell*



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Regional Director's Letter
North Carolina Wildlife Federation

You will be interested in three recent books which present various conservation problems. They are Harrison Brown's "The Challenge of Man's Future" (Viking Press, N. Y., 1954), Fairfield Osborn's "The Limits of the Earth" (Little, Brown, Boston, 1953), and Durwood Allen's "Our Wildlife Legacy" (Funk & Wagnalls, N. Y., 1954).

Mr. Brown's comprehensive volume deals essentially with the non-renewable resources such as coal, oil, and minerals. Although the scope of his treatment is tremendous, he achieves a remarkable clarity of presentation. I do not infer, however, that it is easy reading. Much of it is tough going, with numerous statistics and graphs. But the attentive reader will be rewarded.

The extent of his study is shown in his statement of his purpose: "This book represents an attempt to examine man's past and present and, on the basis of the clues derived from such a study, to examine his future." The overall result of Mr. Brown's examination is heartening. In contrast with such a volume as William Vogt's "The Road to Survival" it may be said that Brown is optimistic.

The interlocking factors which will determine man's future discussed by Mr. Brown are "the rates at which people breed and die . . . the rapidity with which nonrenewable resources are consumed . . . the extent and speed with which agricultural production can be improved . . . the rate at which the undeveloped areas can industrialize . . . the rapidity with which we are

able to develop new resources . . . (and) the extent to which we succeed in avoiding future wars."

I believe you will find this book worthwhile. If for any reason, however, the whole volume is too much for you, Mr. Brown's final chapter, "Patterns of the Future," is particularly recommended.

Mr. Osborn's book is concerned with the same general theme as Mr. Brown's. He writes: "The purpose . . . is to stress the influence, both as regards past history and the present world situation, exerted by the relationship between people and the resources of the earth."

The treatment, however, is quite different. Mr. Osborn's presentation conceivably might appeal more to the general reader, whoever he may be. His plan is based upon a discussion of the various areas of the world with respect to population and potential food production, concluding with what he terms "The Hour of Decision." As he states it, even the discovery of nuclear energy "becomes a meaningless incident if we do not intelligently conserve, use and develop the life-supporting elements of the earth—its soils, forests, and water resources—"

Among the many interesting ideas to be found in this book two particularly appeal to this reader. One, that instead of being concerned with how *many* billions of people the world can feed it would be truer humanitarianism to concentrate on the number that could be fed better. Quality rather than quantity. The other, that industrialism itself, that is, the bringing in of new industries (The South take note), is not the economic panacea quite generally believed.

Messrs. Hunter and Fisher, here is your book: Durwood Allen's "Our Wildlife Legacy." Within its 840 pages you will find the answers to most of the questions you have been arguing about, usually erroneously, for years. For example, Mr. Allen discusses from their many angles such controversial subjects as stocking, both fish and wildlife, the necessity of reducing deer herds by taking both sexes at times, and the fallacy of bounties.

However, the contribution of this important book is by no means limited to the hunter and fisherman. It is meat for any "responsible citizen." As Mr. Allen says, "He (the responsible citizen) has needed . . . an adequate boil-down of wildlife science properly related to the conservation (wise use) of other resources. That guidance function is the aim of this book. Our goal is a *sound conservation philosophy* from which an intelligent person can factor problems as they arise and reach his own logical decisions." And again he writes "this book is intended to serve all groups who have an interest in developing strong state and national wildlife program." It is a pleasure to affirm that the book accomplishes the purpose as stated.

According to the author ignorance has been the cause of most conservation troubles. And most of us have been woefully ignorant. However, the prospect for the future looks brighter as we become more familiar with population pressures among animals, the importance of a favorable environment, and the need for an overall national plan with respect to our renewable resources. Cognizance of these will hurry to their deserved oblivion what Mr. Allen terms "the three tools in the kit of the amateur game and fish manager": bounties, artificial stocking, and the importation of exotics.

The value of the book is added to by the inclusion of reference notes by chapters, a generous bibliography, and a satisfactory index.

Roland McClamroch

Is This a Record?

"Dear Sirs:

I went to your state in January of 1953 with nothing to look forward to but 18 months duty at Fort Bragg. I left there last week to return to civilian life.

"Along with a new daughter and house trailer I dragged home an even more rare possession in any man's life. It was a finny, big-mouthed fellow called bass weighing 12 pounds and 4 ounces. He was mounted in Chapel Hill by Mrs. Logan. In fact it was Mr. Logan who suggested I refer to you for an answer to this question.

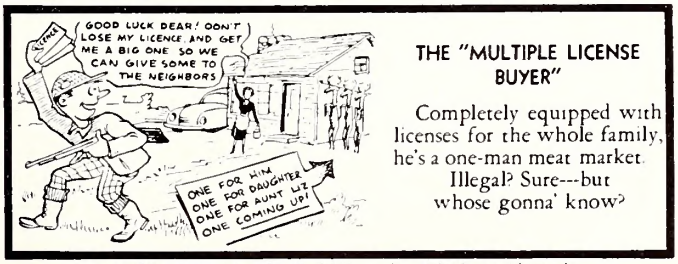
"I would like to know where my fish ranks among the big bass on record caught in North Carolina. He was caught 13, January, 54 on Ft. Bragg Reservation. He was 28½" long and 25" at the girth. I got him on spinning tackle using 6 pound test line.

"I hope you can give me some information on this subject.

Thanks,
Frank E. Richert, Jr."

This is probably not a record, but it is among the biggest bass ever caught in North Carolina. Know of a bigger one, anybody?

GAME HOGS YOU MAY KNOW . . . . by Jack Mitchell



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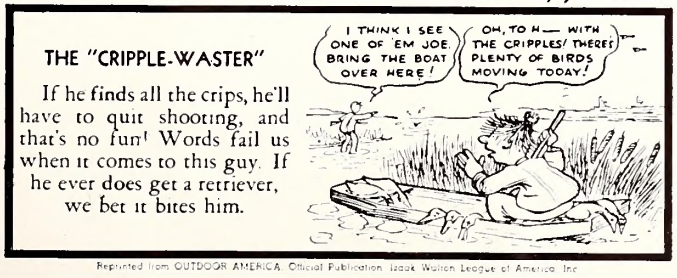

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Wildlife
IN NORTH CAROLINA

TEN CENTS NOVEMBER • 1954

Photo by Jack Dermid

Evening at Mattamuskeet

A hunter returning to the lodge after a successful day in the marshes of Lake Mattamuskeet—with a promise of good hunting tomorrow—is a scene familiar to many Tar Heel waterfowl enthusiasts. The removal of carp has made the refuge more attractive to wintering geese and ducks. See page 6 for story.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

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Governor

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COVER

A pair of ruffed grouse explode from their hiding place beside a wilderness trail in the Sherwood Wildlife Management Area. Painting by Malcolm G. Edwards, supervisor of mountain refuges.

☆ ☆ ☆

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Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

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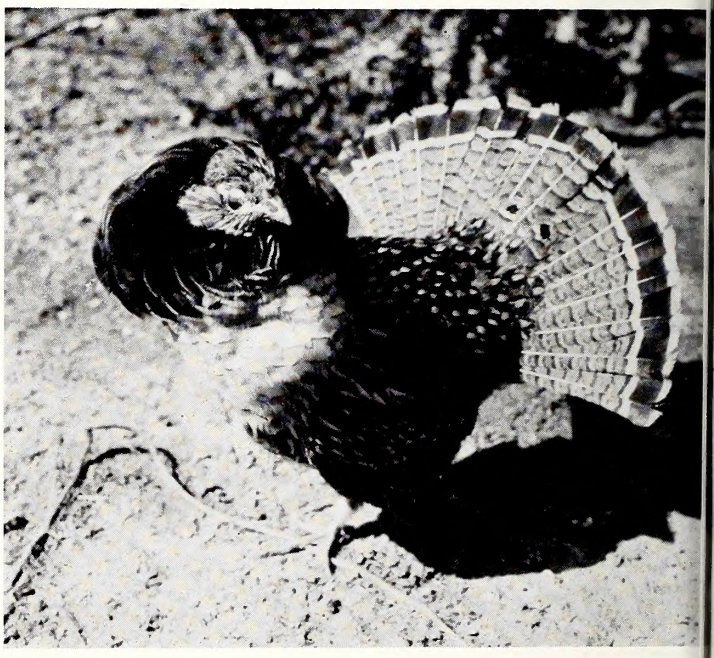
The Ruffed Grouse

by Rod Amundson

Reprinted by Request

Photo by F. C. Hardy

This remarkable photo shows a male grouse performing on its drumming log. The sound is produced by the rapid beating of the wings against air. Below: Should the drumming attract a female, the cock will seek her favor by strutting and displaying its ruff. Pennsylvania Game Commission Photo



So much has been written about the ruffed grouse that it would be impossible to do other here than list some of the more important facts about this interesting and highly important game bird.

The ruffed grouse is closely related to the bobwhite quail, the pheasant and the wild turkey, being a gallinaceous (chicken-like) upland game bird. Even closer relatives of the ruffed grouse are the prairie chicken and sharptail of the western plains, and the sage grouse of the semi-arid states. Although ruffed grouse are confined to the mountain counties of North Carolina, they once extended their range out into the Piedmont.

When North Carolina was first settled, grouse afforded easy meals to pioneers. Grouse are notably a species of wildlife having little natural fear of man. Through the inroads of civilization, however, grouse in North Carolina have been pushed back farther and farther into the wilderness areas of the mountains, and are now among the most cautious and wary of game birds.

North Carolina lies almost at the extreme southern reach of the grouse range. The ruffed grouse is usually considered to be a northern bird, but the high elevations of the Appalachian range afford them suitable habitat as far south as northern Georgia.

Many Tar Heels refer to the ruffed grouse as "pheasant" although this latter name more acceptably applies to the ringnecked pheasant and kindred species imported from Asia. The ruffed grouse is distinctly an American bird, and one of the more important native game birds of North Carolina.

Characteristics

Writing in 1919, Brimley stated: "Perhaps the most striking characteristic of this grouse is the habit the male has of 'drumming.' " Many are the tales as to how male grouse sound their deep, rolling drumming sound that can be heard a mile on a still day. Some believe it to be the wing feathers beating on the drumming log. Others think it to be a vocal sound. Actually, the sound is made by a rapid beating of the wings against air. Tone and rate of vibration varies with the speed and intensity of the beating. Male grouse almost invariably do their drumming on a fallen log. This fact is what probably has given rise to the fallacy of beating the log with the wings. The drumming sound is either a mating call to attract females into the harem, or a challenge to other males, depending on the season. Once heard, the sound of a grouse drumming is something never to be forgotten.

Grouse are much larger in size than quail, being about the size of a small chicken. The arrangement and texture of the feathers give them a somewhat misleadingly large appearance, but a brace of grouse on the dinner platter will furnish food for several people. The average weight is 26 to 28 ounces, and the average adult male is about 18 inches long.

In color the sexes are marked very much alike. A detailed description of a ruffed grouse would require

several pages of type. Suffice it to say that the general color is a mottled, barred, and ringed, a general brown to buff body color with lighter and darker color. Distinguishing the male birds is a ruff of feathers on the neck, a smaller one on the females. There is a crest of feathers on the heads of both sexes. This as well as the neck ruff can be erected. The neck ruff is the feature which gives the species its name.

In flight, ruffed grouse become the most difficult of targets. They explode out of heavy cover and dart quickly into more heavy cover, leaving only the quickest shotgun handler a fair shot at the prize.

Grouse usually roost in trees during the spring, summer, and fall, but in the winter when there is deep snow they bury themselves in a snowdrift for a comfortable night's rest. Often these amazing birds will plow into a snowdrift from full flight, completely disappearing in the snow and leaving only the disturbed snowflakes to show where they alighted. Since the embedding in snow usually occurs on the south side of a slope, it is seldom the birds become trapped by crusting over of the snow.

Food Habits

The food habits of the ruffed grouse are almost a complete index of the vegetation and insect life of their environment. The diet varies with the seasons, fruits and berries being the favored items during late summer and fall, tender buds of shrubbery during the winter and spring, and insects, grass, and tender shoots the spring and early summer diet.

Mating

Male grouse are polygamous, and will assemble as many hens together in a harem as they find it possible to attract. Once mating has occurred, the hens steal away into the woods to build their nests, lay the eggs and hatch them. Male birds have nothing to do with the family life other than to sire the young.

During the season of harem assembling, there are many battles royal among competing cocks. The sounding of the mating drumming may attract a hen whom the cock seeks to add to his harem by a great deal of ruffing of feathers, strutting, and general showing off. If the drumming attracts another cock, however, there is apt to be a battle. Each cock seeks to establish for himself a territory of operations, and will drive off intruders if he is physically capable of doing so.

Nesting

Grouse hens usually select a very well secluded spot for forming the nest. The nest may be located at the base of a tree stump with plenty of shrubby cover, in the top of a fallen tree, under a brush pile, or any spot which affords some protection from predators.

Eggs vary from eight to fourteen, and are of a pale buff color that blends well with the nest materials. Incubation usually takes place in May, and the downy chicks are precocious from the time they emerge from the egg. The mother bird accompanies them in strolls through the woodlands and over the slopes in search for food, sheltering them with her protecting feathers during the night and during inclement weather. Grouse grow rapidly, and by late fall are almost fully matured.

Enemies

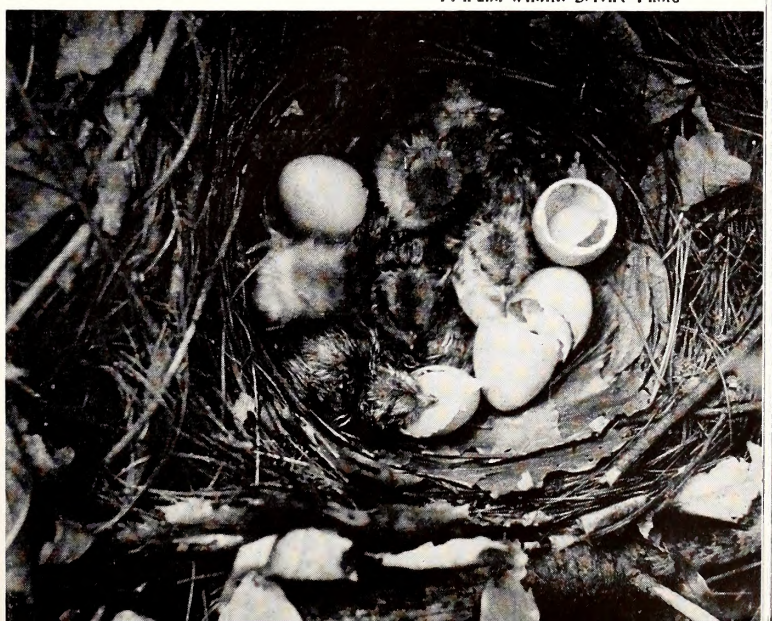
Grouse are highly susceptable to predation. During the incubation period they risk the inroads of semi-wild pigs roaming the woods. Stray dogs plunder the nests, as do skunks and other smaller animals. Birds young and old fall prey to certain hawks and horned owls. The extent to which wildcats prey on grouse is still indefinite, but these large predators undoubtedly take a toll of grouse. Wood-roving housecats take a considerable toll of grouse, especially the young birds. Foxes are known to take grouse, and even bears will make a meal on a clutch of eggs. It is amazing that there remains an important grouse population despite this long list of predators.

●——————See RUFFED GROUSE Page 16

Pennsylvania Game Commission Photo

A grouse perched in a sumac bush. Besides insects, grouse feed on a wide variety of seeds, fruits, leaves, and buds. Below: Like quail, grouse chicks leave the nest soon after hatching.

Fish and Wildlife Service Photo



COMMERCIAL CARP REMOVAL
At Lake Mattamuskeet

by Willie G. Cahoon

U. S. Fish and Wildlife Service, New Holland, North Carolina

Reprinted from *The Journal of Wildlife Management*

Conservation in action aptly describes the carp removal program at Lake Mattamuskeet. Follow up observations by the author during the past two years reveal increased waterfowl usage, particularly by ducks, as a direct result of rough fish control and the invasion of 15,000 acres of the lake by food producing plants. Today, the remnant carp population is held in check by the removal of 25,000 pounds annually.

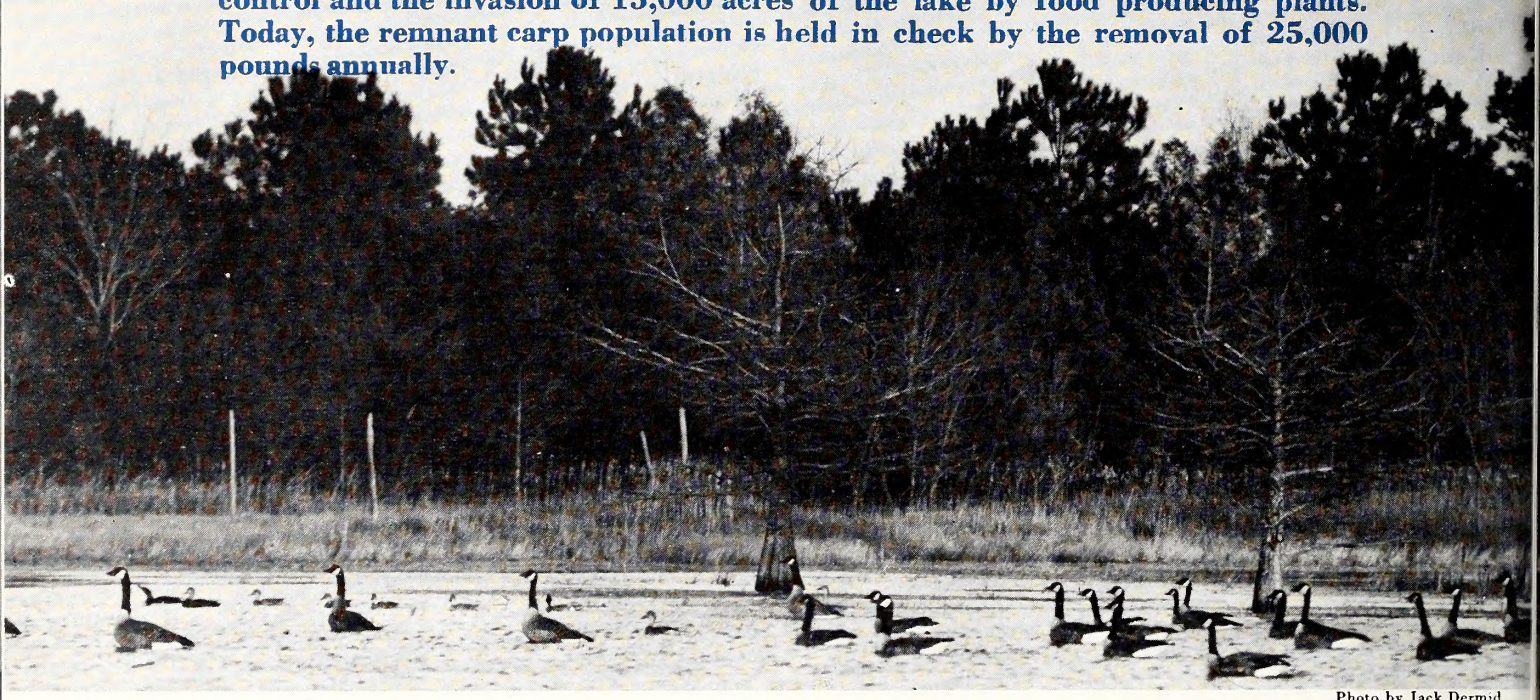


Photo by Jack Dermid

Better living conditions at Lake Mattamuskeet for waterfowl and game fish mean better sport for North Carolina sportsmen. Here Canada geese and black duck share a secluded cove.

Lake Mattamuskeet is famous as a National Wildlife Refuge for a wintering concentration of swans, Canada geese and ducks. The 50,000-acre lake is located in Hyde County, North Carolina, seven miles north of Pamlico Sound. Prior to 1915 the lake was an open body of water with no obstructions to mar the surface. The marsh was limited to a narrow band of low flats on the south shore. There was only one small outlet canal draining this vast area.

In 1915 the lake was purchased by a stock company and the largest pumping plant in the world, at that time, was installed. The lake was drained and approximately 20,000 acres were reclaimed for farm lands. Except for short periods, these lands were cultivated until the fall of 1932, when the lake refilled after financial failure of the drainage project.

On October 30, 1934 the Federal Government purchased the lake as a wintering ground for migratory waterfowl. After the refuge was established improvements were begun to manage the area for the purpose desired. More canals were constructed to secure drainage by gravity, not only for the purpose of influencing plant life in the marsh, but also to assist crop production on adjacent private farm lands. An earthen causeway, with five bridges, constructed in 1941-42, more or less divides the lake in halves.

At present, levels are controlled by gates on six canals draining into Pamlico Sound. The lake receives no creek or river drainage, being fed by runoff and agricultural drainage from the surrounding watershed. The open water consists of approximately 30,000 acres, bordered by 20,000 acres of marsh and upland. It is the practice to lower the lake water level during the growing season to expose shorelines as early in the spring as possible for proper growth of native emergent waterfowl food-plants. The number of waterfowl utilizing the area has increased substantially as a result of this drawdown.

Until 1949 the lake water was so turbid that submerged aquatic plants could not exist. Secchi disc visibility in the lake proper was approximately six inches in waters that averaged three feet deep. The salt content of the open lake for the past five years averaged 875 p.p.m. chlorides, or 2.5% sea strength. After the first agricultural drainage the fish population naturally was reduced to a minimum; but, subsequent to the 1932 water rise, there developed a tremendous population of largemouth bass, crappie and white perch, which provided excellent sport-fishing. Since 1937 the lake fishery changed from a predominantly largemouth bass and crappie population to one in which perch and finally carp were dominant. Sport-fishing declined accordingly. Data supporting this trend were collected by the writer and interpreted by Holloway (1948).

The Role of the Carp

Since Mattamuskeet is a wintering ground for thousands of waterfowl, a large quantity of natural waterfowl food-plants is needed to carry the birds through the winter. However, the 30,000 acres of open water supported practically no submerged aquatics. A constant six-inch Secchi disc visibility precluded the development of such aquatics. It was thought feeding carp were responsible for the turbid condition.

Observations during the past six years indicated that the carp also were destroying large quantities of marginal marsh vegetation submerged after summer rains. To reduce such depredation and to increase water clarity, a stepped-up program of carp removal was encouraged. Attempts were made to locate a market that would be profitable to local commercial fishermen. One interested person built several ponds near Winston-Salem, N. C., during 1948, securing carp from Lake Mattamuskeet for stocking purposes. He then sold permits to local sport-fishermen. It is known that this project yielded a good income to the owner. Construction of carp ponds at other points in the state increased — all with good success. At present (1952) it is estimated there are in North Carolina 150 ponds which frequently restock rough-fish from Mattamuskeet through 20 to 25 individual-owned tank-trucks.

The Removal of Carp

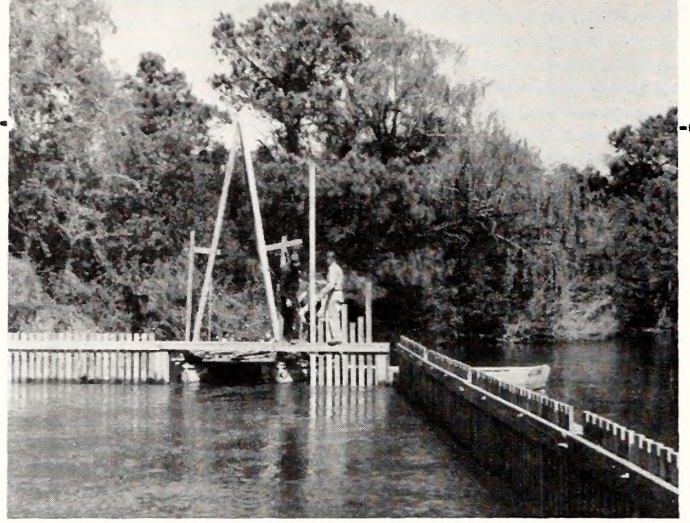
The problem of carp reduction in such a vast lake was approached with some trepidation. Local misguided opposition, state restrictions against seining lake waters, and a degree of administrative apathy had to be overcome before fishing could be started. The first attempts with fyke-nets in the canals, starting in 1940, did not yield outstanding results. The problem was complex, in that it was desired (1) to stop the annual migration of adult carp into the lake without halting the spring run of white perch, (2) to reduce the present adult rough fish population in the lake, and (3) to reduce young carp that would continually develop from lake spawning.

Stopping the Annual Migration into the Lake

Lake Mattamuskeet drains into tidal Pamlico Sound through six water-control structures. Principal spring migration of carp and white perch occurs through three of these canals. The peak of the perch migration is in April; that of carp in May. This period coincides with maximum discharge of lake waters to favor waterfowl marsh management and local agriculture. Both species easily entered the lake while the structures were open for drainage. The problem was to modify the structures to permit water passage and white perch entrance but to halt adult carp. Screening of wire failed because of rapid clogging by debris and silt. The water quality also makes metal barriers short-lived. An obvious answer was a weir of wooden construction. On the "Headquarters-Canal" a successful barricade was developed which passes perch but stops adult carp. It also serves as a trap for lake carp moving through the canals from one section of the lake to another. The weir consists of one continuous slat barricade, with a slat funnel-trap attached, to impound the carp within a two-mile section of a 90-foot-wide canal.

The weir is built of cypress in the following manner. Pilings, 4″ x 6″, are jetted into firm bottom of the canal to support the structure. Then, 2″ x 6″ timbers are notched to allow 1″ x 4″ slats to pass through slots on a two-inch spacing. To keep the slats on the proper spacing and in line, two notched timbers are required, one about two feet above the water line and one near the bottom of the canal, or approximately six feet apart, depending on the water depth. The timbers are bolted to the piling, and the slats are fitted in the top slot, driven through the lower slot into the canal bottom

Visiting hunters and fishermen can find good accommodations at Mattamuskeet Lodge—a famous landmark which once served as a pumping station to keep the lakebed dry for farming.



The Fish and Wildlife Service and the Wildlife Resources Commission cooperated in constructing weirs to stop the spring migration of adult carp into the lake.

about four feet (or down to solid soil). The portion of the structure where the ends connect with the shore should be riprapped to keep the carp from boring under the structure. The slats are nailed to the top timber only, to permit easy removal of broken slats, and 2″ x 6″ braces are driven into the bottom and bolted to both sides of the barricade. A two-foot wide walkway is attached to one side, furnishing easy access for cleaning debris from the structure. The width of the weir opening is about twelve inches or smaller, according to the size of the impoundment desired and the size of the fish being trapped. A deflector board is attached in the throat of the weir to guide the fish into the impoundment. The structure was constructed by the Fish and Wildlife Service with the North Carolina Wildlife Resources Commission cooperating.

Three periods of fyke netting inside the weirs since 1951 has indicated that they are stopping large carp, gar, catfish and bowfins but passing most game fish. To perfect this phase of management it is desired to construct weirs on the other five outlet canals.

Removing the Carp Population

Adult carp removal was started during 1940, in a small way, by the use of pound or fyke nets located only in the canals. This practice was continued until 1949, with no apparent reduction in the carp population. During the fall of 1949 fishermen were encouraged to convert to drag seines, under strict supervision of refuge personnel. Seining sites free of snags were located and permits assigned to groups of commercial fishermen. It was pointed out to them that baiting of seining sites with grain would improve their catch of carp and catfish. To stimulate this practice the refuge supplied surplus corn for trial seining. This method proved so successful that the fishermen began purchasing their own bait. We have continued to furnish some surplus corn and beans each spring to encourage the removal of as many carp as possible before the onset of the spawning season. Catches at this time are usually small and would not otherwise be economically feasible without this subsidization. Bait for carp and catfish also include soybeans, cottonseed cake, and chicken scratch-feed which attracted as well as corn. Baited spots do not seem to attract game fish. In operating, a lapse of approximately five to ten hours is allowed after the site is baited to permit carp to congregate. A drag net then is laid out by boat around the baited area and the net pulled in to shore. When this method was first used from one to seven tons of carp were captured in single hauls of a three-hundred-yard seine. The best netting periods have been February to April and September to October. No netting is permitted during the December-January waterfowl hunting season. Daytime seining during cold weather has been successful, but in the summer seining is limited mostly to late afternoons and early mornings.

The carp are kept in good condition while in holding nets with 1″ bar, twenty to thirty feet in diameter and approximately eight feet deep. This type of pound was found to be far more efficient than a holding pen built of wood palings, since the fish did not bruise themselves in their attempts to escape. Transportation by tank-truck for several hundred miles was found feasible during cold weather by the use of aerated tanks similar to those employed by fish-hatcheries. For hot-weather shipment successful transportation was possible by loading the tanks in later afternoon, adding another pump (and sometimes ice), and traveling at night.

Reduction of Young Carp

The seines have been catching sizable quantities of fingerling carp, presumably recently lake-hatched. These are too small for the holding pounds but are often placed directly into the tank-trucks. It is felt that additional control of small carp will result from extensive recent stocking of predatory game fish.

Effects of Carp Removal

The Mattamuskeet carp fishing has improved local economics, physical conditions in the lake affecting the flora, and possibly the sport fishing within the period of the described activity. Over 1,600,000 pounds of carp and 95,000 pounds of catfish have been removed from Lake Mattamuskeet principally for live-sale to North Carolina upland fish ponds.

Carp are aquatic "hogs" which root up the bottom, stir up mud, and destroy good habitat for waterfowl and game fish. Here a Federal technician examines aquatic plants uprooted by carp.

Below is the catch by years, tabulated from the most reliable figures available:

Year	Carp (pounds)	Catfish (pounds)	Value*
1945	26,341	1,897	$ 2,405.33
1946	6,320	255	543.10
1947	25,753	2,233	2,089.51
1948	54,054	3,459	4,843.17
1949	110,086	13,278	10,798.58
1950	360,012	12,800	30,720.96
1951	745,870	43,831	66,244.25
1952**	367,166	17,658	32,021.98
TOTALS	1,695,602	95,411	$149,666.88

*Gross sale value to commercial fishermen

**Total only to July 31, 1952

In addition to the "commercial" value received by the seiners of Hyde and Dare Counties, North Carolina, this industry has proven remunerative to the truckers and pond owners. The average sport fishing fee for these rough fish is $1.50 for half-day fishing, with a catch limited to ten pounds.

While the economic effect has been locally worthwhile, the effect on the lake management has been even better than anticipated. Secchi disc visibility of lake water was only six inches up to 1948. Coincidental with the last four years cumulative removal of over 1,500,000 pounds of carp, a gradual improvement in water clarity has been obvious, and visibility in much of the shallow lake has increased to three and four feet in depth (1952). It is the opinion of Service biologists familiar with local ecology (unpublished F.W.S. reports by W. P. Baldwin, *et al*) that carp removal is responsible for this improvement.

The immediate result of increased water clarity has been the volunteering of at least 7,500 acres of muskgrass (Characeae) in 1951, and an additional 7,500 acres in 1952, making a 15,000-acre increase in the two-year period. This past summer bushy pondweed (*Naias*) and other desirable pondweeds have appeared, and additional species are being introduced. Damage to shoreline emergents also has decreased. It is assumed that these desirable waterfowl food plants will increase as long as a carp removal program continues, with a consequent marked effect on the size and composition of future waterfowl population at Mattamuskeet National Wildlife Refuge.

In comparing these results with those in other parts of the country there might be reasonable doubt that this degree of carp reduction could accomplish what is claimed. Perhaps Mattamuskeet results are better understood when one considers the following factors: (1) Earliest and most extensive plant invasion appeared east of the dividing causeway, where the first and greatest carp removal occurred. (2) The new outlet weirs permitted lake removal of carp from populations not replenished by migration from Pamlico Sound. (3) Maximum summer drawdown during 1949-51 resulted in minimum water acreage of 20,000 acres. On the basis of this minimal acreage, the 1,215,968 pounds of carp removed in 1949-51 (the "critical" period leading to wholesale invasion by submerged plants) was about 60 pounds per acre, or 37 pounds for the peak year of 1951.

Possibly the total removal of 1,791,013 pounds of rough fish has permitted a better spawning increase of game fish. According to data collected by Ancil D. Holloway, Service fishery biologist, (unpublished Service report) the 1951 condition factors of game fish showed an improvement and reproduction of bass was found for the first time in many years. A vigorous stocking program also has been instituted. During 1949-1952 a total of 1,244,500 largemouth bass fry, 680,000 rockfish fry, and 160,000 bluegill bream have been stocked.

Based on nearly 100 percent creel census, it has been determined (since the carp removal and the restocking of game fish programs began) that the take of game fish by sport fishermen has gradually increased by 1952 to a figure 75 per cent over previous years. Due to the clarity of the lake waters there are large areas suitable for game fish spawning and should the reproduction of these species reach the point expected, the restocking program will cease.

Appreciation is expressed to W. P. Baldwin, U. S. Fish and Wildlife Service, for assistance in the preparation of this article.

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Commercial fishermen use dragnets around areas baited with corn for catching carp. During the peak of the removal program, about 20 crews were in operation while only 3 part-time crews are needed today.

Carp are shipped alive in tank trucks for stocking ponds in localities where fishing for them is popular. They are sold to pond owners, who in turn charge for fishing permits.

Fish and Wildlife Service Photos by W. F. Kubicheck

GAME LAWS

100 Years Ago... And Now

by Malcolm G. Edwards
Refuge Supervisor

Did you know that a hunting license was required in England over 100 years ago? Or that taking game after sunset was punishable with "three months at hard labor"? The game laws of England and Wales in 1864 were surprisingly similar to those in effect now, not only as to principle, but even the wording is nearly the same. *The Manual of British Rural Sports* by Stonehenge, published in 1856 gives game laws then in effect and in many instances they could have been lifted almost verbatim from the hunting laws of many of these United States today. For instance, "persons taking or destroying game by night, viz.; from an hour after sunset till an hour before sunrise, shall be committed, for the first offense, to three months; second offense, six months to hard labor," which is very similar to present night hunting laws. "Game" is defined as "hares, pheasants, partridges, grouse, heath or moorgame, black game (a type of deer) and bustards."

They even had a Sunday "blue law." It read, "any person killing or taking game, or using a gun, dog, etc. for that purpose on a Sunday or Christmas day, is subject, on conviction by two justices to a penalty not exceeding 5 pounds (a pound is roughly $3.10) and costs." Seasons were set: "Partridge not to be taken from Feb. 1 to Sept. 1; Pheasants not to be taken from Feb. 1 to Oct. 1." "Black game season was closed from December 10 to Sept. 1 except in Somerset, Devon, and New Forests, where the season shall be closed from Dec. 1 to Aug. 20." Those exceptions sound familiar, don't they? Another which you will recognize is "any person who shall have in their possession any bird of game, after forty days (after close of season) shall be subject to a penalty . . . not exceeding 1 pound, for every head of game." "Persons killing or taking, etc. . . . or using gun, dog, etc. for the purpose of searching for game without game certificate are subject, etc." Even then, attempting to take, as is often seen in present day laws, was a violation. The penalty for hunting without a license was almost $100.00. "A game certificate (license) . . . now raised to 4 pounds 10 pence." That is about $12.50.

Then, as now, the county benefitted from trials; section 37 relating that "penalties to be paid to the overseers of the parish, one-half to go to the use of the county, and the other to the informer."

Selling of game was legal if the person purchased a special certificate for this purpose. One big difference concerned ownership of the game. On numerous occasions, our courts have ruled that the game belongs to the state; in Stonehenge's *Abstract of Game Laws*, section 7 "makes game the property of the landlord."

There were sections dealing with trespassers—fine "not to exceed 5 pounds"; sections allowing professional hunting partners to need only one license. There were also sections allowing arrest without warrant under specified conditions, and authorizing justices to summon witnesses.

"For refusing to produce certificate to any assessor, collector, landowner, etc. . . . penalty, 20 pounds." Then, as now, you were required to show your license.

Another parallel to our own laws is that applying to game damaging crops. "Tame pigeons—for shooting these without leave, penalty, 20 pounds, unless they are shot while injuring corn, when they must not be removed from where they are killed." This same law applies to game species in our own statutes. One strange sounding law stated that "Rabbits in Warrens, are private property, and a person sporting with them is liable to an action for damages, without notice."

All in all, the basic principles are much the same, except that penalties were much higher, as in those days a pound had several times its present value. The game situation in England at that time evidently closely paralled our own situation today, as those were stiff laws for any age.

In England, the penalty for hunting without a license was once almost $100.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Wildlife Protection Day Proclaimed By Commission

Thanksgiving Day, November 25, has been proclaimed by the N. C. Wildlife Resources Commission as Wildlife Protection Day. More than 150 full-time employees of the Commission plus nearly 200 deputy wildlife protectors will be on duty to enforce the laws and regulations which protect North Carolina's game species.

Thanksgiving Day marks the opening of the seasons on wild turkeys, quail, and rabbits, and in 20 Piedmont counties, squirrels. The Commission anticipates that the largest group of hunters in the history of the state will be afield on that date. Records show that the most frequent violations on opening day are hunting without proper license... Copies of the 1954-1955 hunting regulations are available at license dealers throughout the state.

* * * *

1954 Raccoon Stocking Program Under Way

Hunting clubs and individuals in Western North Carolina who wish to obtain coons for stocking may get their animals earlier this year, and in better condition. By allowing designated trappers to operate under hunting regulations, the Wildlife Commission can expedite delivery of fall-fat animals early in the season.

Persons or groups wishing to obtain early shipments of coons should immediately contact the Wildlife Commission, Box 2919, Raleigh, so that orders for early delivery may be processed. Animals trapped and transplanted in the early part of the season stand a better chance of survival and therefore are more desirable for stocking than those taken later in the season.

* * * *

Wildlife Commission's Biennial Report Published

Published and ready for distribution to interested persons is the Wildlife Commission's fourth Biennial Report, covering the fiscal years from July 1, 1952 to June 30, 1954. With nearly 100 pages of readable narration, illustrations, and statistical data, the report is designed to give a factual account of the activities of the Commission during the past two fiscal years. Edited and written for usability, the report is designed for use by the Governor and General Assembly and others interested in North Carolina's wildlife conservation program.

UWHARRIE

WILDLIFE MANAGEMENT AREA

Photo Feature By Jack Dermid

The Uwharrie Refuge will be opened for deer hunting for the first time on November 15. Here is a look at the country.

View from a fire tower near the southeast corner of rolling Uwharrie Mountains support a good growth c conditions for deer and wild turkey.

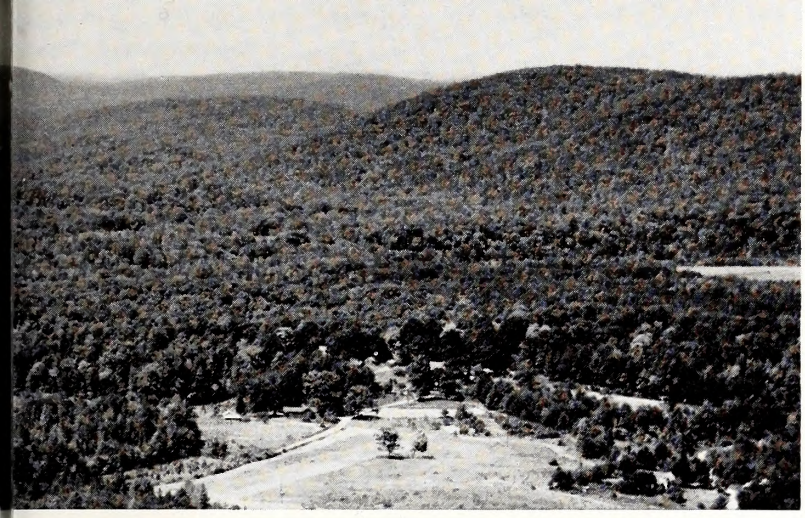
The Wildlife Commission's big game restoration gram will pay another dividend in November the Uwharrie Wildlife Management Area open public hunting. A crop of big bucks is ready fo vesting.

Located in Stanly and Montgomery cou Uwharrie was established in 1944-45 with the ing of 123 deer which were live-trapped o Reynolds' estate in Surry county. The nucleus prospered, and today a high population exists w the refuge and on surrounding lands. During a open season last year, these surrounding lands duced a kill estimated at over 200 head. Ma Ollie Thompson reports that many of the deer w ed more than 200 pounds and carried troph antlers.

Only the portion of the Uwharrie Refuge lo in Montgomery county will be open to huntin contains about 13,000 acres of excellent deer The Stanly county side, containing 4,200 acre

About 25 miles of roads have been built in the refuge to facilitate management and protection and to make the entire refuge accessible to hunters.

The Uwharrie River now forms the southern boundary of th ment area. Deer trails in the mud along the banks indic movement of deer into surrounding territory.



ves an overall picture of the Montgomery county section. The low, dwoods and upland pines that provide excellent food and cover

Ollie Thompson, refuge manager, examines one of the many natural salt licks occurring in the area. Deer have dug a small crater in their efforts to eat the mineral-rich soil. Below: Where natural salt licks are lacking, the Commission supplies salt blocks. This one shows heavy deer usage.

located within Morrow Mountain State Park, will remain forever closed. This section is small enough to permit surplus deer to move into adjacent areas for harvesting.

Hunting will be conducted according to the rules and procedures set up for all wildlife management areas. Deer hunts will be held November 15-27 on a first come first served basis with the daily quota set at 200 hunters. The checking station is located near Eldorado off highway 108 about 10 miles northwest of Troy.

Besides the refuge itself, the two counties will be open to hunting according to State regulations. This includes the large tracts of national forest land south of the Uwharrie River, which were originally stocked with deer and until this year included within the refuge.

The forecast is for good deer hunting in the Piedmont of North Carolina in an area which completely lacked deer 10 years ago.

One phase of the management program at Uwharrie is the maintenance of permanent pastures for deer and turkey. The fields are planted to ladino clover, rescue grass, tall oat grass, and other food producing plants. They help to keep deer from raiding nearby croplands.

The Highway Commission has erected signs to warn motorists to watch for deer. During last season's county hunt, many hunters took the signs literally and posted themselves nearby!

Announcing . . . ANOTHER *Wildlife* ESSAY *Contest*

CONTEST RULES

1. All pupils in North Carolina schools in the 7th to 12th grades will be eligible.
2. Registration for the contest will be done by teachers who will write to Contest Headquarters, Box 1341, Raleigh, N. C., stating the number of students who wish to enter the contest.
3. Only one essay may be submitted by any one student.
4. Essays must be legibly written, or if typed, must be double-spaced.
5. Essays may not be longer than 1,000 words.
6. Registration of students by teachers must be at Contest Headquarters postmarked not later than midnight January 15, 1955.
7. Essays are to be written on this subject: "The Economic Value of Wildlife in My Community."
8. Judging of essays will be conducted at the regional science fairs of the N. C. Academy of Science.
9. The contest ends February 28, 1955, and essays must be in the hands of judges postmarked not later than midnight March 1.
10. The sponsors of the contest reserve the right to make any necessary amendments to the contest rules.

Teachers . . .

ENTER YOUR PUPILS

Today!

Sponsored jointly by the

N. C. Wildlife Federation

N. C. Academy of Science

N. C. Wildlife Resources Commission

$100.00 FIRST PRIZE

75.00 SECOND PRIZE

50.00 THIRD PRIZE

PLUS SIX $10.00 PRIZES FOR THE BEST ESSAYS FROM EACH OF THE SIX ACADEMY OF SCIENCE DISTRICTS

●

Watch for further announcements in Wildlife in North Carolina

Bird Banding Reveals

Travels of Tar Heel Waterfowl

by Bill Hamnett

Sometime ago, 2324 years, Aristotle, naturalist and philosopher of ancient Greece, talked to a group of young scholars under the trees on the hills around Athens about the evident appearance and disappearance of birds during the year. Much of his instruction has been proved fundamentally sound, but some was inaccurate and superstitious. Some superstitions persisted for twenty centuries, while others were magnified in importance but soon were disapproved and corrected. Surprisingly, it was not until 1944 that the wintering grounds of the chimney swift were discovered. Yet for centuries an idea prevailed that each fall these birds plummeted into the soft mud of the marsh lands to remain until the spring thaws warmed and revived them. Yes, much more is known now about this phenomenon of nature—migration.

We recognize bird migration today as a periodic movement from one locality to another during the four seasons of the year. The distance travelled in migration varies greatly from a yearly trip of 25,000 miles to one of 3 miles or less, depending on the species and the habitat association.

Since this is the advent of the waterfowl season, let us see where our waterfowl come from and where they go. Waterfowl are distinctly migratory birds, generally nesting far north of North Carolina and spending the winter months here with us. This movement indicates a continued and concerted effort today by the States and the Providences of Canada is a must in conservation if we are to maintain and perpetuate waterfowl shooting. North Carolina is second to none when it comes to waterfowl shooting in eastern United States. There are many activities by man which are constantly thwarting constructive attempts by the conservation agencies of our country and Canada, to exploit the domain of land, at best, suitable for waterfowl; and it is an ever constant struggle to minimize exploitation and greed by selfish interests.

The material used in this article was taken from records that have come into the Wildlife Resources Commission from the bird-banding section of the U. S. Fish and Wildlife Service. The birds reported have been banded as part of the Federal bird banding program which began in 1920. Over the past 4 years we have amassed over 500 reports. The bird banding program is simply live trapping, recording pertinent data, placing a designated band on a leg of the bird, and releasing the bird. In the waterfowl banding program much has been learned relative to the routes these birds travel going to and from the breeding grounds and wintering

Figures on map indicate the number of waterfowl banded in the various states and Canada that have been taken in North Carolina.

areas. It enables a better location of migratory bird refuges and a more balanced and applicable open season on waterfowl regardless of the location in the country.

Look at the chart a moment and see the great distance some of these birds have travelled and how long they carried their band.

Species	*Date and place banded*	*Date and place recovered*	*Distance (miles)*
Pintail	9-7-48 Labrador	12-27-48 Currituck Sound	1,500
Black Duck	10-4-51 Quebec	11-27-51 Ocracoke Island	1,000
Green w. Teal	10-3-51 Newfoundland	11-23-51 New Hanover Co.	1,500
Canada Goose	1-11-52 Alabama	11-21-52 Beaufort Co.	600
Canada Goose	2-12-47 GADDY'S POND	10-31-50 Augusta, Michigan	700
Canada Goose	2-13-38 MATTAMUSKEET	9-26-51 Quebec, Canada	1,000
Pintail	1-27-43 MATTAMUSKEET	5-5-49 Manitoba, Canada	1,500
Canada Goose	1-18-51 PEA ISLAND	9-22-51 Labrador	1,500
Wood Duck	8-22-49 Maine	1-3-52 Camden Co.	700
Redhead	8-18-49 Manitoba	12-2-49 Currituck Co.	1,500

This chart is but a representation of the distances between where a bird was banded and the band recovery. One goose carried its band 13 years and supposedly made this annual trip that many times. A green-winged teal carried its band only 51 days but travelled 1,500 miles. Our records indicate that most wood ducks reported had been banded earlier in the same year. Canada Geese banded at Pea Island are killed about 9-11 months later, while the reports from Mattamuskeet birds show that they were killed on an average 7 years later.

At the present time, we have reports of waterfowl banded in 20 states which have wintered in North Carolina and reports from 7 provinces of Canada.

This season when you waterfowl hunters take to the marshes and lakes be sure to check your ducks and geese for the small aluminum band that may be on a leg. Remove the band and send it in to the U. S. Fish and Wildlife Service, Washington 25, D. C. You will be informed as to where and when the band was placed on the bird and I am sure you will be amazed at the information sent you.

SCHOOL PAGE

Through the cooperative efforts of pupils, teachers, and principal, Micro School grounds have been beautifully landscaped with trees and flowers.

Micro School Sets Example

by Lunette Barber

If the proverb,, "charity begins at home," is true, so should conservation of our natural resources; and next to home, school is the most ideal place to teach and practice conservation.

The principal, Mr. L. J. Worthington, of Micro School, Micro, North Carolina, began a conservation project at his school in 1934. In looking around the spacious campus, there was only one long-leaf pine which the seniors planted as a class memorial in 1929. Mr. Worthington then decided that much could be done and taught.

The playground was suffering from a severe case of wind erosion; with each refreshing shower, the foreground was having acute attacks of rain erosion; besides, the walks and driveways were feeling minus soil pains instead of plus soil pains. It took hard work, but with trees transplanted from a near-by wooded area which needed thinning, a well-planned windbreak was set up. Then a long avenue of water oaks was planted for the foreground. With a beginning like this, interest grew and grew and much work was done.

RUFFED GROUSE

from page 5

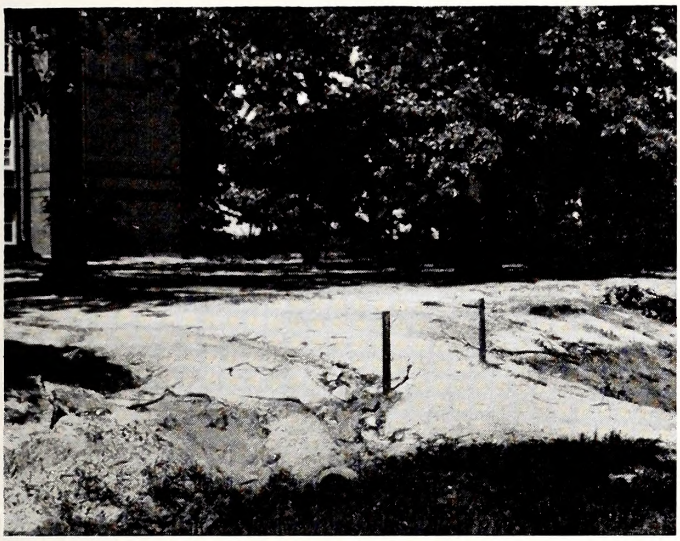
Management

The management of ruffed grouse is closely associated with forest management. Grouse must have a wide variety of woody plants to feed on, and these occur only in specific localities. Stands of large virgin timber seldom prove a good grouse habitat. Selective cutting of forest trees establishes openings where understory vegetation can grow abundantly to provide food and cover. Grouse prefer a mixed habitat, with areas of dense tree growth, clearings with shrubby growth, and variations between these extremes. Shrubby borders between woodlands and agricultural lands produce desirable grouse habitat, as do shrubby growths along roadways.

Grouse must have ample spots for dusting and drumming, and these may be provided artifically where nature does not provide them, or where land use practices have destroyed those provided by nature.

Hunting

Grouse hunting is an exacting sport, but one which is gaining popularity in North Carolina. To begin with,



How does this picture compare with the one on the left? It shows the eroding, barren surroundings of a school about 30 miles away.

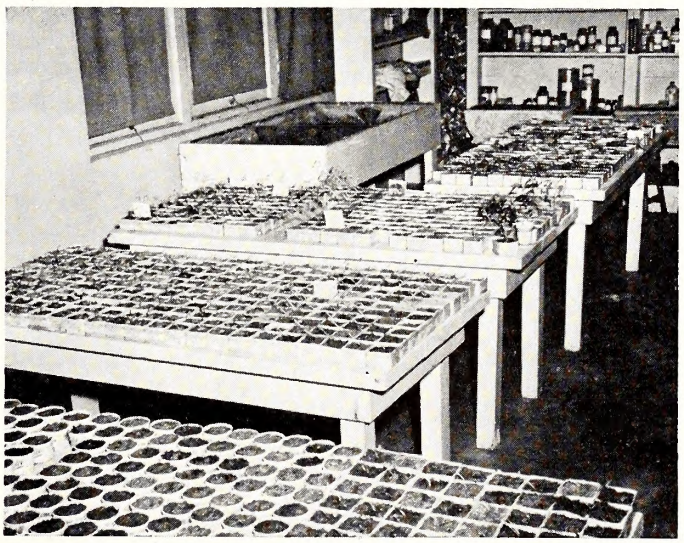
A windbreak of pines transplanted from a nearby woodlot helps save soil and makes the playground more comfortable for students.

During the time Mr. Worthington was principal and engineering the conservation project, there was a pupil in high school there who is the present principal of the Micro School, Mr. J. W. Batten. Not only has Mr. Batten continued the project, but it has been intensified and stepped up to the rating of "conservation and beautification." How is it done? The answer is interest, cooperation, and work—teachers, pupils, and community. The payoff is there—trees, windbreaks, good walks, good driveways, wildlife border strip, flowers, and beauty.

Mr. Batten realized the great need and knew that pleasant surroundings make working a privilege and pleasure. He also was aware of the fact that enrollment was increasing rapidly which meant more footsteps on the walks and playgrounds, more school buses and automobiles on the driveways, and greater use of all the resources at the school. It was obvious that the children could learn and put into practice the very same activities at home and in the community.

With the rapid increase in population in the nation today and the great demand on our natural resources—what we want plus what we need—each individual should resolve and put into practice what Mr. Worthington and Mr. Batten did—"Step up the teaching, learning, and practice of conservation of our soil, water, forests, and wildlife" in order to make our country stronger and greater because all our needs are dependent upon our natural resources.

A basement room is set aside at Micro School as a nursery for flowers and shrubs. Photos by Luther Partin



grouse are found only in the more rugged areas of the mountain counties, and considerable physical stamina on the part of the hunter is a prime requisite.

Further, grouse are creatures of dense cover and they get up and fly from cover with terrific suddenness. Just as suddenly they disappear again in another thicket. Seasoned grouse hunters swear the birds deliberately put as much tree growth and brush between themselves and the shotgun as possible. Certainly they make sporting if not difficult targets.

More and more grouse hunters are learning the value of dogs for grouse hunting, not only to retrieve hard-to-find cripples, but to save a great deal of walking over rough terrain to find the birds.

The arts of jet propulsion and smoke screening were mastered by the squid and the octopus long before man ever dreamed of such things. Water squirting through funnels propels the animals, and enemy pursuers are confused by the discharge of clouds of ink.

Yellow PERCH

by J. H. Cornell

When you mention yellow perch to a fisherman who has ever caught one, you can see him start to drool. Lots of game fish grow larger or are easier to catch. Some jump higher or fight longer on the line. But none are better straight from the frying pan in an overcoat of corn meal and butter.

This little gamester is generally considered a northern fish. North Carolina seems to be near the extreme southern limit of its range. The center of abundance of the species is the Great Lakes Region, where yellow perch are of considerable commercial importance, in addition to their value to the sport fishermen.

The yellow perch, frequently known as the raccoon perch or ringed perch, is a beautiful fish, especially at spawning time in the spring. Except where stunted populations exist, they characteristically reach a size of about 12 to 15 inches and a weight of about one pound. The sides and back are brassy-green to golden yellow, and there are seven broad dusky vertical bars on each side. The ventral and anal fins may be a light grayish-green, but more frequently they are orange and shade to crimson at spawning season. The scientific name of this handsome fish is most appropriate. Its generic name, *Perca,* simply means "perch." The specific name, *flavescens,* literally means "yellowish."

But color is never a dependable method of identifying a fish. Like the other members of the perch family, the dorsal fins are separate. There are 13 or 14 spines in the first dorsal fin. The second dorsal usually consists of 2 spines and 13 soft rays. The formula for its dorsal fin, then, would be written "XIII-II,13" or "XIV-II,13." The scale formula is "7,62,16." This means that usually there are 7 rows of scales between the dorsal fin and the lateral line, 62 scales in the lateral line, and 16 rows of scales between the lateral line and the anal fin. The anal fin has 2 spines and 7 or 8 soft rays. With this information the yellow perch usually can be identified, regardless of color.

Habitat

These fish seem to prefer lakes, large ponds, and large slow-flowing streams. They prefer water that is fairly deep, and their preference is for water which is too cold to please the largemouth bass and bream. One noteworthy fact concerning the yellow perch is that it seems to be able to exist under a greater range of conditions than most other fresh water game fish species. The larger perch remain in the deepest and coolest water they can find during most of the year, but are sometimes forced into shallow water during the summer to escape stagnant conditions.

Usually they are found in the vicinity of aquatic vegetation. They do not do well in waters which are turbid or are lacking in large weed beds. This probably is because a large part of their food consists of insect larvae, crayfish, and small fish which usually are concentrated in the beds of weeds or are living on them.

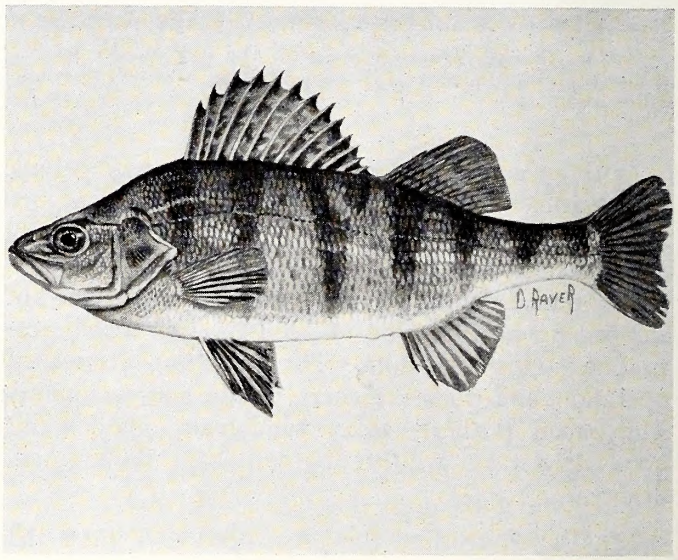


Illustration by Duane Raver

The handsome yellow perch is distinctively marked with seven dusky bars on a background of brassy-green to golden yellow.

Life History

Yellow perch do not construct nests of any kind. Their eggs are laid in long gelatinous strings in shallow water. They usually are attached to the submerged parts of water plants or branches, logs, and stems or roots. Spawning takes place at a temperature of between 45 and 50 degrees, and one string of eggs may contain as many as 90,000 potential young. The egg strings are zig-zag in form like the sides of an accordion.

This egg string is unusual in that it is a hollow tube, and any vibration in the water, such as wave action, causes fresh water to move over the surface of the egg mass, both on the inside and outside. This water movement over the eggs supplies the necessary oxygen for them to develop without any effort on the part of the parent fish. It will be recalled that trout and many other species solve this problem by laying their eggs in running water. The bream and bass lay their eggs in nests and then fan them to keep them supplied with fresh oxygenated water. The yellow perch does it the easy way.

Perch are rather slow-growing fish, and in smaller ponds of water tend to become so numerous that they quickly exceed the food supply and become stunted. In this respect they are quite similar to bluegill sunfish in farm ponds. It usually takes three, and frequently four years, for yellow perch to reach a length of 10 inches.

Not the least of their disadvantages as a member of the game fish community is that they have a considerable interest in eating fish eggs as a part of their regular diet. Their predation on other species is much more serious in this respect than in the number of fish they eat later in life.

Importance

The greatest value of the yellow perch to fishermen lies in its willingness to bite at any time of the year and in its value as a table delicacy. They are seldom taken by the sport fisherman of the "purist" class. They seldom feed on the surface, and show no great interest in flies, spinners, and similar hardware. Aside from the commercial nets which take large numbers in northern waters, they most often are caught by the man with the cane pole and small minnow or worm.

In North Carolina, near the southern limit of the range of the yellow perch, it is not nearly as abundant as it is in northern waters. However, it is of interest to fishermen in cold, clear lakes. The angler who uses small hooks with bait at depths of 25 to 40 feet may be rewarded in many of our waters by a catch of one of the most succulent morsels of fish life that ever graced a frying pan.

PROTECTOR OF THE MONTH

Daniel Brodie Bell

Born at Apex, North Carolina, on February 14, 1906, Mr. D. B. (Shorty) Bell graduated from the Apex High School in 1925. Thereafter, he attended Campbell's College for one year and State College for two years.

On March 1, 1935, he accepted a position as a combination game protector and forest warden with the Department of Conservation and Development and served in that capacity until October, 1942, when he enlisted in the armed forces. Having served overseas in the European Theater, Mr. Bell was honorably discharged in 1945 and returned to Kinston, North Carolina, as a game protector for Lenoir County, a position he has held to the present time.

Mr. Bell married Miss Carolina E. Tull in 1937, and they now have one son, aged 4. Mr. Bell is a member of several organizations including the Christian Church, the Masons, the American Legion, and the VFW.

During his seventeen years service as a game protector, Mr. Bell has checked thousands of hunters and fishermen and has prosecuted many violators with the result that he is at once feared and respected as a conservation law enforcement officer.

Enforcement Record for August

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of August, 1954:

Persons checked	**34,014**
Prosecutions	**667**
Convictions	**623**

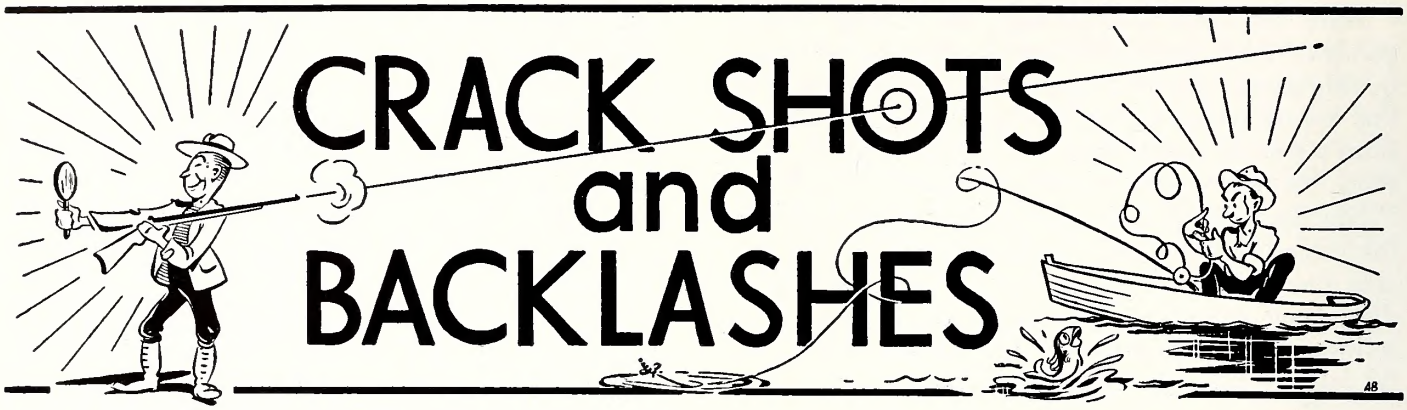
A total of $5,474.00 in fines was collected and paid into the school funds of the counties in which the convictions were obtained. Fines were not collected, being either suspended or not levied, in 51.53% of the total number of convictions.

It's the Law!

Question: May a person lawfully hunt on land he has leased from the owner without a hunting license?

Answer: That depends on his purpose in leasing the land. If he has leased the land for the purpose of cultivation and is conducting agricultural operations thereon, the law permits him to hunt on such land without a license. If he has leased the land for any other purpose, however, he must have a hunting license.

This distinction does not apply to fishing license requirements. While the law exempts the owners of land from license requirements while fishing thereon, no exemption is made in favor of lessees, agricultural or otherwise.



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Once again it is a pleasure to pass along some well chosen words by Roland McClamroch of Chapel Hill who is a regional director of the National Wildlife Federation:

REGIONAL DIRECTOR'S LETTER

Some of your hunting seasons have already opened. Soon the others, quail, deer, migratory fowl, will be in full swing and pressing into the fields and blinds will be the undiminishing number of shooters. The great increase in hunters in a relatively few years presents many problems to the sportsman, the wildlife club member. I hope they are synonymous. The wildlife club member indulging in poor sportsmanship strikes me as incongruous as a reeling policeman.

The problem herewith presented has to do with game laws. The true sportsman is by nature an observer of game laws, in whatever capacity they apply, bag limits, shooting hours, sex distinction. He may think some are unnecessary or downright foolish, but as long as they are on the books he tries to live up to them.

Unfortunately, many who have joined the shooting fraternity recently haven't had the hunting background which just naturally causes him to accept hunting regulations as he would for instance traffic regulations. Here is where the wildlife clubs and individual sportsman members come in. You probably have some in your club whom you know to be at least careless in law observance. What are you going to do with this embarrassing situation?

Here's one suggestion. Devote a meeting just prior to the opening of the hunting season if possible to a discussion of the importance to all of game law observance. And, although I'm not discussing that here, if there is time bring in something about shooting courtesy. Game law observance and courtesy are pretty close together at times.

Previously I mentioned foolish laws on the books. I suppose every State has some. Mine does. Any game law that is patently unenforceable or is illogical with respect to the means used is a foolish one to me. What are you going to do about it? The proper course is to bring it to your state federation meeting for action and submission to the legislative committee, who will in turn work for its repeal. A slow process perhaps, but more satisfactory to our modus operandi in the end.

"Dear Sir:

I have received your fine magazine for over a year now and have been meaning to write and tell you how much I enjoy it. The story in your September issue by Jan Martin called "Little Beagle Lost" was wonderful. Young Mr. Martin should be proud of such a fine piece of work. I enjoy "Crackshots and Backlashes" and make it a point to read it every month. By the way Mr. Raver's painting of the Walleye is one of the best I have seen. I can't quite place the small fish. Can you tell me what they are? Thanks again for putting out such a nice magazine.

Sincerely yours,
Charles M. Fitch
Mamaroneck, N. Y."

WILDLIFE too is proud of young Jan Martin's beagle story. The fish referred to are gizzard shad, a forage fish which is a favored item in the diet of walleyes and some other game fish species. Gizzard shad are especially numerous in Lake James where walleyes have been successfully introduced.

"Dear Sir:

"Recently a fishing access area was built in the locality under the auspices of the Lee County Wildlife Club in collaboration with the N. C. Wildlife Resources Commission.

"I understand the idea behind these access areas is to provide a suitable launching site for fishermen's boats. This idea is an admirable one, but the actual operation has not been realized. In fact, the access area has actually hurt the fishermen of the Cape Fear, Deep, and Haw River sections.

"Speed boat enthusiasts, not fishermen, use the launching site and on the weekends and holidays the rivers are so full of speed boats that fishing is invariably poor and the fishermens boats are nearly washed out of the river by waves created by the speeding "sportsmen."

"I and the other fishermen who frequent these rivers would greatly appreciate any suggestions from you or

any sportsman who reads this on how the fishermen and speedsters can be fairly reconciled.

Yours very truly,
J. Rex Thomas"

Okay. There is the problem. Now, who is going to come up with a solution?—Ed.

"Dear Sir:

"In reading through your September 1954 issue of WILDLIFE IN NORTH CAROLINA, I noticed an article concerning Ken Beegle which supposedly demonstrated pointers on markmanship and gun safety.

"I have been interested in and associated with guns for a number of years, and I must say that I cannot see any pointers on gun safety in the picture showing Mr. Beegle shooting a hole in the bar of soap in his wife's hand. Also, it is impossible to draw a bead when the front sight is shielded.

"I am enclosing my slogan for gun safety which has been used by nationally known firearm manufacturers for a number of years.

"Best regards to a good magazine. Let's keep it like that.

Very truly yours,
Tom J. Richardson"

We don't recommend shooting holes in bars of soap held up by anyone, even your wife. Ken did this stunt to prove two things (1) that a .22 bullet packs a terrific wollop, and (2) that he is such a good shot that at close range and with a fairly large target (bar of soap in this case) that he doesn't need the front sight. In this case he used his left eye to hold the muzzle on target. We recommend that trick shooting be left to such experts as Ken Beegle. The following rules are always good.

10 COMMANDMENTS OF SAFETY

1 Treat every gun with the respect due a loaded gun. This is the cardinal rule of gun safety.

2 Carry only empty guns, taken down or with the action open, into your automobile, camp, and home.

3 Always be sure that the barrel and action are clear of obstructions.

4 Always carry your gun so that you can control the direction of the muzzle even if you stumble.

5 Be sure of your target before you pull the trigger.

6 Never point a gun at anything you do not want to shoot.

7 Never leave your gun unattended unless you unload it first.

8 Never climb a tree or a fence with a loaded gun.

9 Never shoot at a flat hard surface or the surface of water.

10 Do not mix gunpowder and alcohol.

"Dear Sir:

"I have just read your story in the August issue of WILDLIFE, with a great deal of interest. ("A Case Sewed Up With Wire").

"Is it critical of our Courts or is it just a statement? It appears to be critical, as you say the case "never quite came to trial."

"I would appreciate a response.

Yours very truly,
R. A. Hedrick
Attorney-at-law"

WILDLIFE would be the last to ever be critical of our courts, and no criticism was intended or implied. The case never came to trial simply because in the face of overwhelming evidence the defendants plead guilty.

* * * *

A further word is due on this month's cover. Malcolm Edwards, who has charge of the operations on our western wildlife management areas, has had a longtime ambition to do a cover. A skilled grouse hunter, Malcolm has captured the thrill of birds bursting from cover. In the original water color you can feel the chilly mountain breeze and smell the tang of smoke in the air. We are looking forward to getting more art work like this, and possibly a story on another of Edwards' hobbies, falconry.

"Dear Sir:

"I am a fisherman and I fish Lake James just about every week, and I think that the Commission should know what is going on up there. The small pike that the fishermen are catching and throwing back half of them are dying. You can see them lying on top of the

Young Izaak Waltons

Bobbie Shuping (left) with his 22½ inch walleye weighing 3¾ pounds and Lynn Propst with two nice bass taken in Lake James.

water. Especially up in the Linville bottom, because you can catch plenty of little ones up there.

"One of my buddies caught 33 last Saturday and only three were keeping size of 15 inches. They will die while you are getting the plug out of them if it is a hot day. There should be something done about it, but how it makes me sick to see them 10 or 12 inches long lying around dead. You could cut the size to 12 inches and let them have 8 as on bass.

"Might help, I don't know, but when you have got a pike 12 inches you haven't got anything. But there wouldn't be as many thrown back to die. This is just my idea you can just forget it if you want to and leave as is.

"Three weeks ago me and my brother-in-law took our two sons, age 11, and his son caught a 3¾ pound pike that was 22½ inches long, and boy was he proud. I am sending a photo of the boys and their catch. Bobbie Shuping with pike, Lynn Propst with bass which was caught trolling with an L. S. Lure.

"Always willing to do my part for better fishing.

Eugene Propst
Valdese, N. C."

Some waste of fish is inevitable when undersize fish must be returned to the water. However, walleyes do not spawn until they have reached the 15-inch length. That is why a minimum size limit is imposed. It would help if walleye anglers used single hooks instead of gang hooks. The latter tend to mangle fish beyond recovery.

CATTLE IN WOODLOTS

Studies have shown that we can get more good timber from our woodlands by keeping livestock out, and more production from our livestock by giving them better pastures.

Woodland pasture averages only about 275 pounds of dry forage per acre per year. This kind of feed contains about 8% protein—an annual yield of only about 22 pounds per acre. Good open pasture, limed and fertilized, will give 4,000 to 6,000 pounds of forage, with a protein content of about 14% or about 700 pounds of protein per acre—31 times as much as woods pasture will yield.

When cows graze in your woods, small trees are trampled and eaten. Rot and decay sets in where the roots of larger trees are scarred, and timber growth is slowed. In one woodland studied, grazing reduced the annual yield of timber from 189 board feet per acre to 87.

When cows graze your woodland, they pound down the soil so that it won't absorb moisture as it should. In one woodland, records showed that grazing increased surface run-off from 197 to 9,308 gallons per acre per year. When water runs away at that speed it takes soil with it. In this same woodland, soil loss ranged from 5 pounds to 528 pounds per acre per year. Pasturing cattle in woodlots does not, apparently, pay!—Reprinted from *Sylva*.

BOOK REVIEW

It takes a good shot to bag a limit of mourning doves.

MOURNING DOVE POPULATIONS IN NORTH CAROLINA. Edited by Thomas L. Quay. North Carolina Wildlife Resources Commission, Raleigh. 1954. 47 pp. Illustrated.

Tar Heel shotgun toters who go out for the elusive mourning dove would profit well by reading a new pamphlet recently issued by the Wildlife Resources Commission. Entitled "Mourning Dove Populations in North Carolina," this 48-page book is packed with scientific information concerning what goes on with mourning dove populations during the open seasons and the months between.

Written and edited by Dr. Thomas Quay of the N. C. State College Zoology Department, the book deals with the dove from the nesting season through the fall and winter when doves become legal game. In readable style you can find out how many doves are produced in North Carolina each year; when the peak of the migratory flight occurs, the total kill of birds each hunting season, and approximately how many shells the average hunter expends to bag a limit of birds—if he is a good enough marksman to bag a legal limit.

With photographs by Jack Dermid and illustrations by Will Hon, this publication should be popular with dove hunters and conservationists alike. While a limited supply lasts, copies are available free on request. Address: Wildlife Resources Commission, Box 2919, Raleigh.

U.S. FOREST SERVICE AND N.C. WILDLIFE RESOURCES COMMISSION COOPERATING

CALENDAR OF PUBLIC HUNTS: 1954-55

COOPERATIVE WILDLIFE MANAGEMENT AREAS

(S)--SQUIRREL
(G)--GROUSE
(R)--RABBIT
(C)--RACCOON & OPPOSSUM

WILDLIFE MANAGEMENT AREA	CHECKING STATION	OCTOBER	NOVEMBER
SANTEETLAH	1. BARKERS CR.	BEAR BOAR 15-16; 18-19; 22-23; 25-26; 29-30	BEAR BOAR 1-2; 5-6; 8-9; 12-13; DEER BOAR 15-16; 19-20; 22-23; 26-27; 29
	BIG 2. SANTEETLAH	BEAR BOAR 15-16; 18-19; 22-23; 25-26; 29-30	BEAR BOAR 1-2; 5-6; 8-9; 12-13; DEER BOAR 15-16; 19-20; 22-23; 26-27; 29
FIRES CREEK	3. FIRES CR.	S 1; SQUIRREL 4-9; S G 15-16; 22-23; 29-30	S G 5-6; DEER HOG 15-16; 19-20; 22-23; 26-27; 29
ST. INDIAN	4. ST INDIAN	S 1; SQUIRREL 4-9; SQUIRREL GROUSE 20-21; S G 15-16; 22-23; 29-30	SQUIRREL GROUSE 5-6; S G 5-6; DEER HOG 15-16; 19-20; 22-23; 26-27; 29
WAYAH	5. WAYAH	S 1; S G 15-16; 22-23; 29-30	S G 5-6; DEER 15-16; 19-20; 22-23; 26-27; 29
SHERWOOD	6. WEST FORK	BEAR 15-16; 18-19; 22-23; 25-26; 29-30	BEAR 1-2; 5-6; 8-9; 12-13; DEER 15-16; 19-20; 22-23; 26-27; 29
	7. EAST FORK	BEAR 15-16; 18-19; 22-23; 25-26; 29-30	BEAR 1-2; 5-6; 8-9; 12-13; DEER 15-16; 19-20; 22-23; 26-27; 29
PISGAH GAME PRESERVE	8. DAV. RIVER	S 1; SQUIRREL 4-9; SG 22-23	SG 5-6; DEER 15-16; 19-20; 22-23; 26-27; 29
	9. TURKEY PEN (1)	SG 15-16; SG 22-23	
	10. NORTH MILLS	S 1; SQUIRREL 4-9; S G 15-16; 22-23; 29-30	S G 5-6; DEER 15-16; 19-20; 22-23; 26-27; 29
	11. BENT CR.	S 1; SQUIRREL 4-9; S G 15-16; 22-23; 29-30	S G 5-6; BOW & ARROW* 8-9; DEER 15-16; 19-20; 22-23; 26-27; 29
	12. PISGAH LEDGE		DEER 15-16; 19-20; 22-23; 26-27; 29
RICH LAUREL	13. RICH MTN.	S 1; SQUIRREL 4-9; S G 15-16; 22-23; 29-30	S G 5-6; DEER 15-16; 19-20; 22-23; 26-27; 29
	14. SHELTON LAUR.	S G 15-16; 22-23; 29-30	S G 5-6;
MT. MITCHELL	15. SOUTH TOE	S 1; SQUIRREL 4-9; BEAR 18-19; 25-26; 29-30	BEAR 1-2; 5-6; 8-9; 12-13; DEER 15-16; 19-20; 22-23; 26-27; 29
	16. CURTIS CR.	BEAR 15-16; 22-23; 29-30	BEAR 5-6; DEER 15-16; 19-20; 22-23; 26-27; 29
DANIEL BOONE	17. FOX CAMP (2)	S 1; SQUIRREL 4-9; BEAR 15-16; 22-23; 29-30	BEAR 5-6; DEER 15-16; 19-20; 22-23; 26-27; 29
	18. EDGEMONT	S 1; SQUIRREL 4-9; BEAR 18-19; 25-26; 29-30	BEAR 1-2; 8-9; 12-13; DEER 15-16; 19-20; 22-23; 26-27; 29
	19. KAWANA		DEER 15-16; 19-20; 22-23; 26-27; 29
UWHARRIE	20. UWHARRIE		DEER 15-16; 19-20; 22-23; 26-27; 29

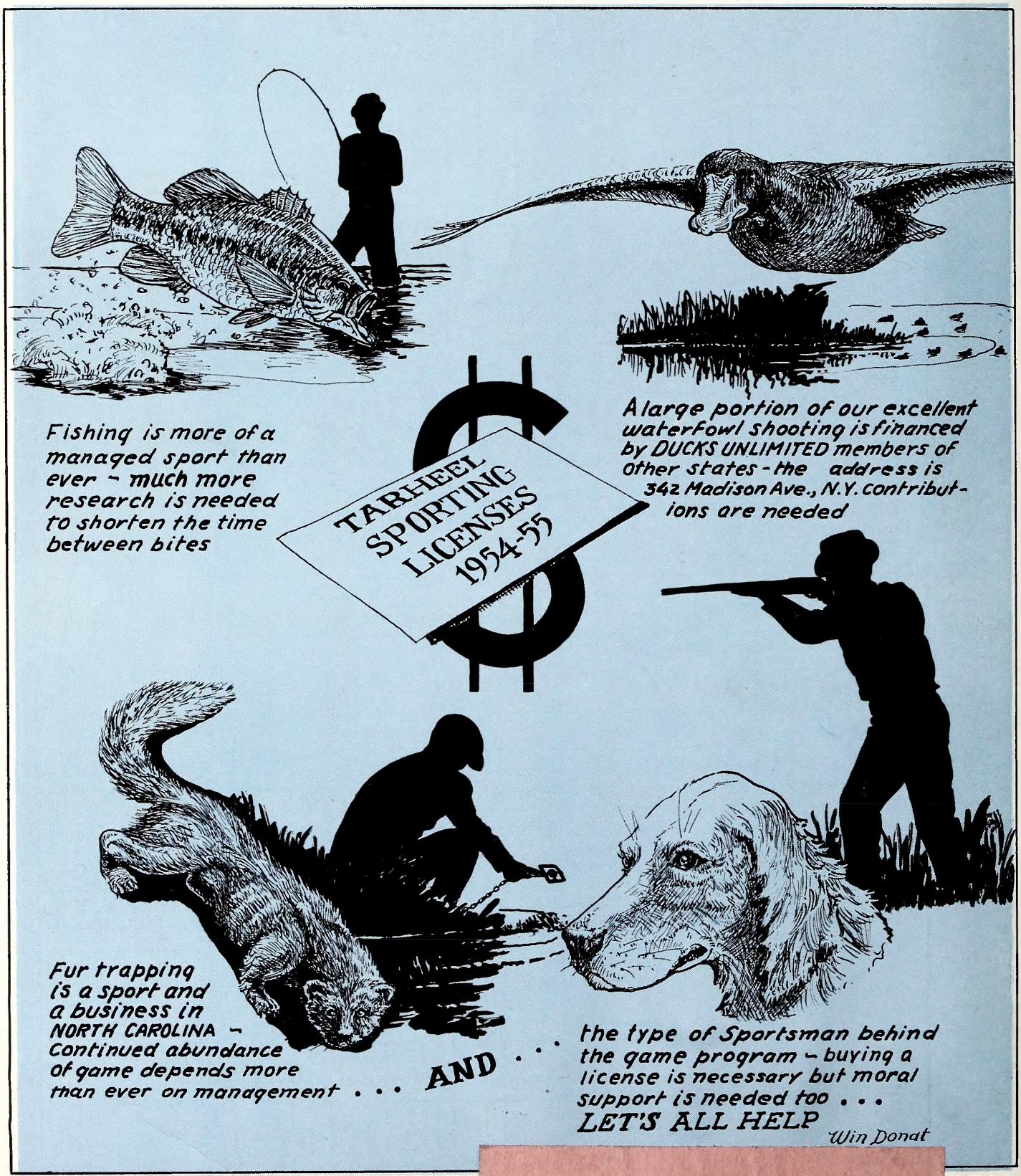
WILDLIFE MANAGEMENT AREA	CHECKING STATION	DECEMBER	JANUARY
SANTEETLAH	1. BARKERS CR.	C 6-7; C 10-11	
	BIG 2. SANTEETLAH	C 6-7; C 10-11	
FIRES CREEK	3. FIRES CR.	C 5-6; C 7-8; S GR 11-12; C 13-14; C 17-18; S GR 18-19	
ST. INDIAN	4. ST. INDIAN	C 5-6; C 7-8; GR 10-11; C 13-14; C 17-18; S GR 18-19; C 20-21; C 22-23; C 26-27; C 28-29; S GR 1-2; C 3-4; C 5-6; GR 8-9; C 10-11; C 12-13; GR 15-16; GR 22-23; GR 29-30; T 31
WAYAH	5. WAYAH	C 5-6; C 7-8; S GR 10-11; S GR 18-19	
SHERWOOD	6. WEST FORK	S GR 8-9; S GR 10-11; S GR 15-16; S GR 18-19; S GR 22-23; S GR 28-29; S GR 1-2; G R 5-6; G R 8-9; G R 12-13; G R 15-16; G R 19-20; G R 22-23; G R 26-27; G R 29-30
	7. EAST FORK	
PISGAH GAME PRESERVE	8. DAV. RIVER	C 5-6; S GR 7-8; C 9-10; C 13-14; S GR 18-19; C 20-21; C 28-29; C 1-2; C 5-6; C 12-13
	9. TURKEY PEN (1)	
	10. NORTH MILLS	S GR 10-11; C 12-13; C 17-18; C 20-21; C 26-27; S GR 1-2; C 3-4; GROUSE RABBIT 6-7; C 10-11
	11. BENT CR.	S GR 3-4; S GR 10-11; S GR 18-19
	12. PISGAH LEDGE	
RICH LAUREL	13. RICH MTN	
	14. SHELTON LAUREL	S GR 10-11; S GR 18-19; S GR 1-2; G R 7-8; G R 15-16; G R 22-23; G R 29-30
MT. MITCHELL	15. SOUTH TOE	S GR 3-4; S GR 10-11; S GR 18-19; S GR 1-2
	16. CURTIS CR.	
DANIEL BOONE	17. FOX CAMP (2)	C 5-6; S GR 7-8; C 9-10; S GR 18-19; C 20-21; C 22-23; C 26-27; C 28-29; C 1-2; C 3-4; C 5-6; C 7-8; C 12-13; C 14-15
	18. EDGEMONT	C 5-6; S GR 10-11; C 12-13; S GR 17-18; C 20-21; C 26-27; C 28-29; C 1-2; C 5-6; C 10-11; C 14-15
	19. KAWANA	
UWHARRIE	20. UWHARRIE	C 5-6; C 10-11; C 17-18; C 20-21; C 26-27; C 28-29; C 1-2; C 5-6; C 10-11; C 14-15

*BOW & ARROW HUNT FOR DEER, SQUIRREL, AND GROUSE.

(1) CHECKING STATION FOR BRADLEY CREEK AND CANTRELL CREEK WILDERNESS HUNTS.

(2) CHECKING STATION FOR CHESTNUT MTN. AND HAWKSBILL WILDERNESS HUNTS.

Dollars Plus Cooperation Mean More Sport For Everyone



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Wildlife
IN NORTH CAROLINA

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Photo by Jack Dermid

Christmas Greetings

. . . with Best Wishes for a Happy and Successful New Year from the Wildlife Resources Commission and its Entire Staff.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

LUTHER H. HODGES
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COVER

A stormy December sky and a flock of pintail tumbling in for a landing on Currituck Sound create a picture to thrill all duck hunters. Painting by Win Donat.

☆ ☆ ☆

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☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all material published.

☆ ☆ ☆

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FIELD BAG CHECKS
REVEAL FACTS ABOUT GAME MANAGEMENT

by Ken Chiavetta
Game Management Specialist

Through most of the year your game biologist's chief concern is the production of game. The distribution of wildlife food and cover plants to the farms and the creation of suitable habitat for the restoration of forest game take up most of his time. He is justly proud of the five million bicolor plants, the million multiflora rose, the 550 acres of browse cutting . . . and all of the other accomplishments of the year, but the payoff is not habitat improvement but the increase in harvest of game. He's proud of the plantings, but he's prouder still of the end product—more satisfied sportsmen.

Your commission is beginning to compile enough hunting records to evaluate its game restoration program. During each open season information is gathered which when analyzed gives some indication of the hunting conditions of the year. *Field bag checks* of doves, ducks and squirrels have yielded considerable information on hunter success and the biology of the animal itself.

Information gathered during such checks has been important in the formulation of game regulations. For example—it was found that during "too early" seasons, a higher proportion of suckling young squirrels were found in the game bags. It was also determined that the incidence of warbles or "wolves" among squirrels was greater at this time. The three time zones for the squirrel seasons are indirectly the results of bag checks of squirrels.

Similarly, the opening dates for the dove season takes into consideration the biology of the mourning doves. Ideally, the dove season should coincide with the peak of the migration and should be at a time when there are relatively few breeding adults. Recent bag checks indicate that less than 3% of the adult mourning doves were breeders during the season. Field checks have also enabled your game technicians to determine the status of the dove killing disease *trichomoniasis* in North Carolina.

In addition to the field bag checks, data are collected at the *checking stations* during the managed hunts on U. S. Forest Service lands. This system, like the field bag checks, has a great advantage over other indirect systems since the data are collected when it is fresh and reliance upon memory is not as great as in post-seasonal checks. The hunter is required to report his kill before leaving the area. Wildlife technicians are then able to collect harvest information for the major forest game species.

A great variety of information collected during these managed hunts. Probably the most interesting figure is the *total kill.* It is obvious from the kill figures (Table 1.) for the western management areas that there has been an almost constant increase in kill for most species since 1949. This *annual rate of increase* in kill varies from 1.33 in deer, through 1.39 for grouse, to 1.63 for squirrel. These figures are important to biologists and should also be significant to the hunter, especially where they are larger than 1.00. A figure of 1.00 means a sustained population, but figures larger than 1.00 indicate an increase in population.

Let's look at the table again using 1949 as a base year. It will be noted that during the period 1949-1953 the annual kill of deer has increased until in 1953 it was treble that of 1949. Similarly the grouse kill has quadrupled during that period, while the 1953 squirrel kill is almost five times that of 1949. The increases in bear and raccoon kills are not as great. Figures such as these can be used to predict the kill from previous years' trends. Incomplete returns from the squirrel kill already indicate that the 1954 kill will follow the indicated upward trend.

Biologists gather information from dove bag checks that is useful in setting sound hunting regulations. Facts about breeding habits, prevalence of disease, age ratios, and hunter success are obtained.

Field Bag Checks and Checking Stations Produce a Variety of Information Useful to Both the Hunter and the Game Biologists.

Knowing the total kill is fine but unless one knows how much hunting pressure was needed to obtain this kill, one remains pretty much in the dark. The information collected on deer at the checking stations is typical of that for other species and will serve to illustrate how intensive the checks are.

A good yardstick to compare the success of hunters on the areas is the statistic "hunter days per kill" (Table 2.). In 1953, this figure ranged from 8 to 20. The schedule of the management program on the areas is geared to the reduction of "hunters days per kill." Construction of roads, clearing of fields and browse lanes are all part of the program of making more acres accessible to the hunter and improving the hunting conditions. The current figure of 13.8 hunter days per kill is a new low for effort required per kill on the western management areas. Examination of the animal itself gives information on its condition, the condition of its range, and past hunting. Each measurement that the technician takes of the deer is important in the determination of this information.

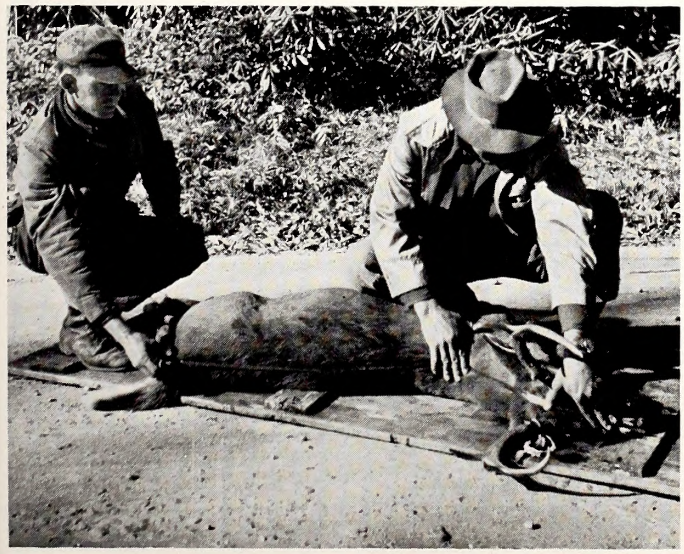
Probably the most important check made of a deer is its *age*. The age composition of a deer herd gives a clue to the balance between it and its food supply or "range" and some indication as to the intensity of hunting. Fortunately, biologists are able to determine the age of deer fairly accurately up through the 10½-year age class. The method used is based upon the replacement and wear of the teeth. The age class distribution (Table 3.) for the mountain deer herds appears to be "normal," that is slightly underhunted.

You will note that the percentages listed under the age classes *decrease* gradually for each successive age class. Thirty-eight percent of the deer harvested on the western management area were 1½ years while 27 percent of the deer were 2½. Absence of deer in the older age classes usually means that over-hunting has been carried on—or that the herd hasn't "aged" enough to get fully established. From the age class frequencies a derived figure called the *annual reduction rate* may be computed which describes numerically the herd condition. This represents the percentage of buck deer removed legally and illegally during the entire year. For the mountains the calculated annual reduction rate is low (37%) and this indicates that hunting pressure has not been too heavy.

Several measurements are taken on deer and all are correlated to the age class. *Body length* and *hind foot length* are measured to make comparisons between skeletal sizes for the different areas. *Antler beam diameter, number of points* and *antler length* are measured to determine antler development which is dependent upon foot conditions. It should be remembered the antlers are shed each year and their development is related directly to the condition of the range.

At the checking stations the necks of the bucks are checked to determine whether or not they are in the swollen condition characteristic of breeding. All deer are checked for ear tags since all live deer handled in the big game restoration program are eartagged before released, and a file card is kept indicating age and measurement information and date and place of release. The records compiled from these deer will add

Measurements of body length of deer tell much about the quantity of food available on the range when the size of the deer is compared to its age. Age of deer is determined . . .



. . . by comparison of the teeth with those collected from deer of known age. Other tools include equipment for opening jaws, flashlight for close examination, tape measure, and notebook.

Photos by Ken Chiavetta

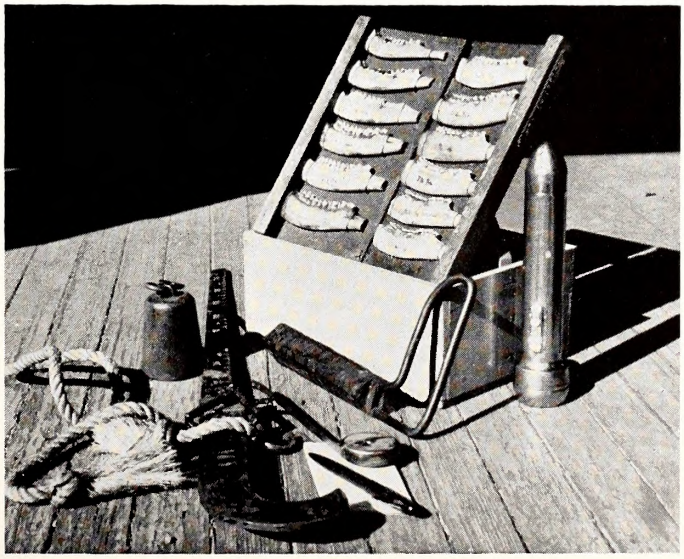


Table 1. Total Statewide kill for major species of game based on questionnaire results for three check years.

	1949-50	1951-52	1952-53
Bear	873	927	1,047
Deer	14,616	17,739	15,572
Doves	101,351	395,829	315,041
Ducks	99,781	110,168	141,461
Fox	92,562	74,144	102,226
Geese	24,592	25,466	25,612
Grouse	9,169	16,736	25,612
Quail	1,775,471	1,358,579	1,414,048
Rabbit	2,149,048	2,237,473	2,624,918
Raccoon	83,306	311,871	231,418
Squirrel	2,486,696	2,225,724	2,696,669
Turkey	914	4,203	2,656
Woodcock	1,530	4,696	8,342

Table 2. Deer Kill on Western Management Areas during 1953.

	Hunter-Days	Total Deer Kill	Hunter-Days per Kill
Daniel Boone	1,844	132	13.8
Fires Creek	298	33	8.0
Mt. Mitchell	879	81	10.7
Pisgah	4,104	357	11.1
Rich Laurel	621	31	20.0
Santeetlah	295	14	11.0
Sherwood	2,121	98	20.8
Standing Indian	677	43	15.7
Wayah	326	18	18.1

Table 3. Percentage distribution by age class of 586 adult bucks—statewide—1953.

	Age Class Percentages								
Region	1½	2½	3½	4½	5½	6½	7½	8½	10½
Mountain	38	27	15	8	4	4	2	1	1
Piedmont	46	23	23	8					
Coastal Plains	14	13	21	7	1	2		1	
Statewide	36.5	27	17.5	9	3.5	3.5	1.5	1.0	0.5

Table 4. Game Kill on Western Management areas — 1949-1953.

	1949	1950	1951	1952	1953
Bear	23	30	23	19	35
Deer	261	311	393	690	807
Grouse	64	99	127	85	241
Raccoon	201	68	99	200	250
Squirrel	1,560	708	671	3,026	8,819

to our knowledge on the habits and life history of the deer.

In the checking of the squirrel and grouse kill, the sex ratio is also determined in addition to age and measurement data. Otherwise, the kill check follows roughly the pattern for deer.

Sufficient personnel are not available to get statewide kill figures directly. The need for such figures has increased in order to evaluate our extensive statewide game program. Your Commission and State College statisticians got together and designed a questionnaire which will give a reliable estimate of the *total annual kill* for the major game species of North Carolina. The procedure is somewhat involved: Questionnaires are sent to a random sample of resident hunting license holders. Next, questionnaires are sent again to all who did not respond to the initial questionnaire. Then, a third subsample of the remaining non-respondents is interviewed personally by game protectors and field biologists.

That's just the beginning! The results are then analyzed statistically and a total kill figure is derived. To satisfy statistical limits of accuracy tabulations of "confidence limits," "standard errors" and "coefficients of variation" are also computed. These values are important in interpreting the results even though they may detract from the readability. It will be noted (Table 4) that for the most part there has been an increase in kill during the past few years.

Streamlining of the techniques of analysis by IBM machines will soon make it possible to have the past year's data analyzed before the current year's game regulations are set up. One group of figures which comes out of the machine is the seasonal bag or kill of a "theoretical," average North Carolina license holder. This should not be confused with the "specialist," i.e. the rabbit hunter who keeps a pack of beagles all year and hunts only rabbits. This "theoretical" Tarheel hunter wound up the season with 8 rabbits, 7½ squirrels, 4½ quail, one each of doves, raccoons, and opossum; plus a lot of recreation.

You may have been contacted by a field biologist during field bag checks or at a managed hunt checking station this past season. We hope you have a better idea of what he's been trying to do. Perhaps your group will help him get the bicolor and multiflora rose on the farms in order to continue providing good hunting next fall for 300,000 Tarheel hunters. And remember, if you are lucky enough to get a kill check questionnaire, answer the questions and return it promptly to North Carolina Wildlife Resources Commission, Box 2919, Raleigh, North Carolina.

Besides total length, other measurements of deer include the hind foot, antler beam diameter, and antler length. Also, the general health and condition of the animal is noted.

Photo by Ken Chiavetta

Keys To The TREE TRUNK PATROL

BACKYARD CONSERVATION

by Bill Hammett

It can be truthfully said that a woodpecker never keeps its "tongue in its cheek." Impossible, because it is too long—twice the length of the bird's head and so long that it coils up in a recess of the skull when not in use. This is a remarkable adaptation in nature, but there are also other interesting developments. Watch a telephone lineman go up and down a pole with his belt and leg spikes. A woodpecker does likewise but the spikes are the stiff bristles at the tip of the tail feathers, and the belt is the bird's feet—two toes directed upward and two down. In flight a woodpecker seems to be racing over invisible hurdles in the air. Its progress in flight is wavy or undulating. By and large, the woodpeckers here have black color somewhere in the plumage, less so in the flicker but there it is a black crescent on the upper breast. All the males and some of the females have red color in the head region of the plumage.

Members of the tree trunk patrol can be easily identified by using the accompanying keys. This immature flicker demonstrates the typical woodpecker method of climbing.

The following key should help you identify the common woodpeckers of North Carolina which are more easily seen during the winter months.

1. Entire head red; belly white; back black
   Red-headed Woodpecker
2. Top of head, back of neck red; back, black and white striped across ..... **Red-bellied Woodpecker**
3. Large (crow size), red crest on head; body black, some white on wings and neck ..... **Pileated Woodpecker**
4. Forehead and throat red; belly yellowish; back black and white; white stripe on shoulder of wing
   Yellow-bellied Sapsucker
5. Red patch on back of head; whitish belly; white streak down middle of back; wings black and white; bill shorter than head ..... **Downy Woodpecker**
6. Similar to but slightly larger than Downy (5); bill as long as the head ..... **Hairy Woodpecker**
7. Red crescent on back of head; white rump patch; spotted breast with a black crescent on upper breast.... **Flicker**
8. Red pip on side of head above a large white cheek patch; back black and white striped across
   Red-cockaded Woodpecker

Another group of winter birds often seen where woodpeckers are found will be the nuthatches, chickadees, and titmice. This is a group of energetic birds, constantly on the move in their never-ending search for food in and among the crevices of tree bark. They may be easily enticed to feed at your feeding station if it is well supplied with sunflower seed and suet.

The following key should help you identify these common birds of North Carolina which are more easily seen during the winter months on the trunk and branches of trees.

A. Small gray birds, smaller than most sparrows, extremely active and acrobatic

   1. Black cap, black bib, white cheek, back gray.... ..... **Carolina Chickadee**
   2. Similar to (1) but slightly larger; High mountains ..... **Black-capped Chickadee**
   3. Only small gray colored bird with a tufted crest; flank rusty colored..... **Tufted Titmouse**

B. One of the few birds which go down a tree head first; back grayish-blue with white trimmings; slender bill; tail not used for propping.

   4. Top of head and back of neck black; black beady eyes on a white face; underparts whitish..... ..... **White-breasted Nuthatch**
   5. Top of head and back of neck black; black stripe through eye on a white face; underparts rusty colored; western part of state..... **Red-breasted Nuthatch**
   6. Top of head and back of neck brown with light spot at base of neck; eastern part of state..... ..... **Brown-headed Nuthatch**

C. Small brown colored bird with a slender curved bill; tail used as a prop when climbing.

   7. Tends to fly to base of tree and work its way up in spirals ..... **Brown Creeper**

Fish and Wildlife Service Photo by Peter Van Huizen

Contrary to popular belief, mature hardwood forests do not provide ideal deer range since much of the foliage is out of reach and ground cover is shaded out by the overhead canopy. Management is necessary to provide adequate year-around food.

Habitat Improvement Proves Useful In

Forest Wildlife Management

by Malcolm G. Edwards

Supervisor, Western Cooperative Wildlife Management Areas

Forest game species each have certain basic needs that must be fulfilled in order to survive and prosper. There is a living creature, be it beetle or bear, for each set of conditions found in a forest. Each has characteristics and needs that are satisfied in his own particular niche. When these conditions are radically changed, another species automatically moves in. This relationship between a species and its habitat is called ecology and it is now recognized that this science is basic to wildlife management.

As certain species are considered game and are preferred by men, the job of the wildlife biologist is to create the particular set of conditions that these species prefer. This always includes food and cover not only for each species but also for each age class of each species. Grouse and wild turkeys, for instance, feed principally on insects when very young and even though an area may fulfill all the conditions needed by the adult birds, if this supply of insects is not present, the young will not survive and no increase can be expected. For reasons such as these a thorough knowledge of life histories is most important. Newspaper articles occasionally ridicule pamphlets concerning the life histories of certain animals and birds. There is, however, a good sound reason for working out the complete life cycle of these species as their needs cannot be satisfied unless they are understood.

The aim of the Wildlife Resources Commission is to manage wildlife with all the tools available, striving to increase each species in accordance with the demand and suitable habitat available. This management may not always consist of habitat improvement alone, as restocking of various species (mostly by trapping and transplanting) as well as popularizing one species to reduce pressure on another are also utilized.

As hunters have different preferences, one species cannot be benefited at the complete expense of another. As a rule, development benefits more than one species, although occasionally management, and particularly the harvest, may comflict. A compromise must be reached, again according to the demand of the sportsmen. For instance, in the salt marshes of the coast, raccoon are a very serious muskrat predator, and are not much valued for hunting. In the mountains, however, 'coons are relatively scarce but nonetheless furnish a great deal of sport.

In most instances a habitat improvement practice will benefit several species. In planting of pastures, deer, boar, turkey, and grouse feed on the grass and clover which also furnishes insects for the young birds. Cutting practices benefit several types of wildlife in succession. In accordance with their needs, different species prefer a different aged forest. A newly cut-over

forest contains optimum conditions for deer as they browse on sprouts and seedlings under four feet in height. As the forest grows up and out of their reach, we find grouse prospering in this pole-sized stand (trees 3″ to 6″ in diameter). The grouse feeds on buds and fruits of shrubs and vines characteristic of these young forests and is quite adept (due to his long tail) at dodging through thick stands of timber and escaping his enemies. As the forest matures, raccoon, bear, squirrels, and turkeys move in.

All of these species are dependent to a large extent on mast (wild nuts of hickory, beech and oak) produced in mature forests. One note of interest that might be mentioned here is the "control" that mast exerts over these animals. Bears and squirrels particularly are affected. Bears must store up fat for their hibernation and will travel great distances to reach mast as berries and fruits will not provide this need.

Squirrels, too, are directly affected by the mast crop. Strangely enough, the squirrel population is largest the year the mast is present and not the following year as many believe. Migration does not entirely explain this situation. On the contrary it is believed that these animals begin to feed on the young acorns in the early spring (the red oaks take a year and a half to mature and are good-sized nuts in the late winter) and the nutritional value of this food results in larger than usual litters which mature by hunting season.

These animals and birds are adapted to forests in other ways; bear, 'coon, and squirrels climb and den, while turkeys are large and must have open woods to run and fly in. Various forest types frequently overlap and animals sometimes survive on habitat better suited to other species.

With unlimited forest land, plenty of money, and a free hand, almost any amount of game could be produced. Unfortunately, all of these factors are limited. A biologist must be cost conscious, and management practices which are not economically practical must be abandoned. An example of this was the attempt to plant honeysuckle on road banks for deer food. Japanese honeysuckle (the vine-type honeysuckle found on fence rows and vacant lots) is a very palatable winter deer browse and has the added benefit of stabilizing road banks, thereby preventing erosion. Unfortunately, the high cost of $37 per acre, as well as the slow rate of growth, made this practice economically impractical.

The tools of wildlife management are habitat improvement by planting and cutting, restocking and harvesting. Some species are very difficult to manage; this particularly applies to bear and other mast-dependent species. As much of the Commission's forest habitat development is on U. S. Forest Service land where a multiple-use policy is effected, game habitat improvement must be dovetailed with other uses such as timber production, watershed protection, general recreation,

Permanent pastures planted to clover and nutritious grasses have proved valuable as a management technique on the western refuges.

and special use areas as the Blue Ridge Parkway, and the Appalachian Trail.

Those who hunt the Western Cooperative Management Areas have noticed extensive clearings, 20 to 50 feet wide traversing and grading around the mountains. These are not fire lanes as some have reported, but are elongated clearings, the purpose of which is to improve habitat for game and to provide access routes for sportsmen. "Forest edge" is a term used to indicate the junction of a clearing and woodland and is an area preferred by many animals, as they like to feed on field-type plants but do not want to venture far from escape cover. Elongated clearings naturally furnish more edge than do large fields and the object is to clear just wide enough to allow the sun to reach the forest floor, thus producing preferred foods close to natural cover.

Pasture plantings are also particularly valuable to grouse and turkeys, since they not only provide grazing

•——————See MANAGEMENT Page 16

Lopped over rhododendron plants provide green winter food. The tops remain alive and within easy reach of deer, and new sprouts appear at the base of the stumps

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Hunting Season In Full Swing

During the month of December the seasons on nearly all species listed as legal game will be open in North Carolina. The only exceptions are certain shore birds and marsh hens that have already left for their wintering grounds. Reports from most of the state indicate that the current season is one of the most successful in recent years.

* * * *

Experimental Planting in Lake James

The Wildlife Resources Commission is taking advantage of extremely low water levels to supply Lake James with organic fertilizer. With the lake at the lowest level since the dam was built, the Wildlife Commission is planting large areas of flat lake bottom to winter wheat. This is expected to reach considerable height before the reservoir fills again, and once submerged in water the wheat will decay and provide nutrients for fish food production.

* * * *

New System of Management Area Hunts Successful

Although several wildlife management areas were over-crowded on opening day, the new system of handling managed hunts was considered successful. In past years hunters had to make application to participate in hunts long before the season opened, and a complicated system of public drawings and allocation of privileges was necessary. This year hunters entered the areas on a first come first served basis on all but the bear and boar hunts in Western N. C. The addition of new hunting areas plus concurrent opening of the seasons spread hunting pressure thinly enough so that hunters could be accommodated on a day to day basis.

* * * *

Fourth Biennial Report Ready for Distribution

Persons interested in obtaining copies of the Wildlife Commission's fourth biennial report may obtain them by writing to the Commission, Box 2919, Raleigh. The report is designed to give comprehensive information on the wildlife conservation program being conducted in North Carolina, and gives an accounting of the way funds received from the sale of licenses and other sources are spent. It will be particularly useful to school teachers interested in teaching conservation.

Animal SIGNS

PHOTO FEATURE

by JACK DERMID

The out-of-doors can be compared with an open book. Instead of paper, the pages are made of river sandbars, mud, trunks of trees, snow, and other of nature's recording surfaces. Instead of printed type to tell the story, there are animal signs in the form of tracks, tooth and claw marks, bits of hair, feeding places, and living quarters.

Every living creature, from earthworm to man, leaves telltale marks in its daily life. By reading signs, the squirrel hunter can spot a teeming woodlot without seeing a single squirrel, or the trapper can place his traps with confidence. Animal signs tell the woodsman more than the whereabouts of a species. They provide facts about how animals live and die. A squirrel's nest in good repair or bits of hair at the entrance to a hollow tell of cozy confort, but a set of rabbit tracks in the snow ending abruptly beside the wing prints of an owl spells sudden tragedy. Nipped dogwood buds in deer range or a pile of mussel shells at the head of a muskrat slide provide clues to food habits.

Unravelling the mysteries of the trail is a challenge which calls for good detective work and close observation. It gives more meaning and fun to hunting and fishing and makes woodland hiking a sport in itself. Why not read nature's book the next time you are in the woods.

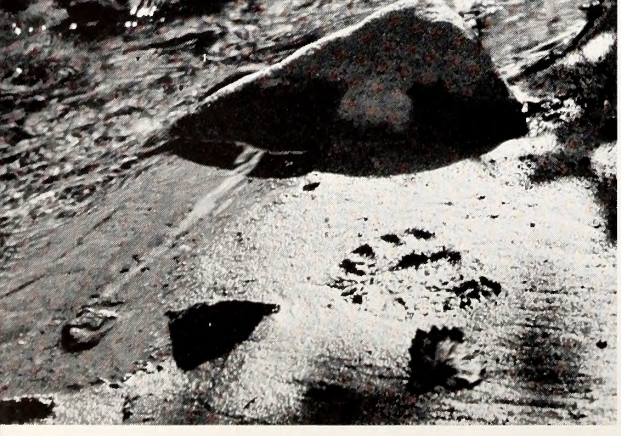
Mud is one of the best of tracking surfaces and faithfully records the finest detail. Below, three woodland wanderers left evidence of their passing. A roving dog (center) crossed the trail of a raccoon while at the upper left the faint tracks of a squirrel show where it squatted to dig up an acorn.

Where a cottontail got its feet muddy. Close examination reveals clues to identity—four toes on each foot, long hind feet with the smaller front ones trailing *diagonally* behind, and the impression of heavily furred soles. In this track one front foot is partly obscured between the hind feet.

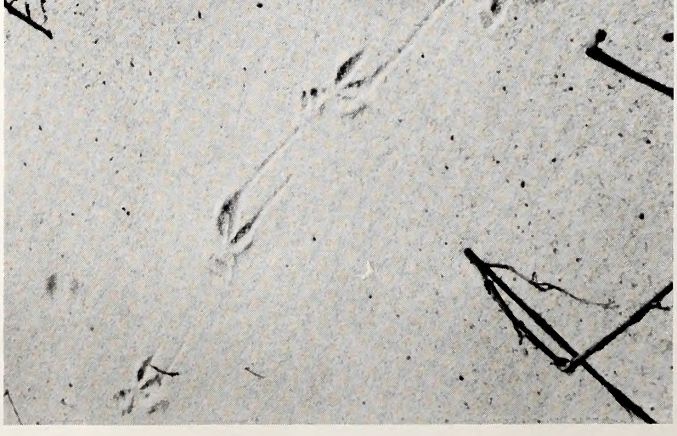
Many birds and n
This pile of river
feast.

Skunks obtain a
in the ground and

Footprint of a bear by a trout stream in the Daniel Boone Wildlife Management Area. Bear are flatfooted and the tracks of their hind feet often resemble those of a barefoot boy.



The walking track of a crow in sand. The tracks of birds are often difficult, if not impossible, to identify. Size, length of stride, pattern of step or hop, and location of the track give clues.



Beaver leave
build impre
trees, scatter
to their pon

e signs at their feeding places.
s are the remains of a muskrat

of their food by digging for it
teristic circular pits.

signs to record their activities. They
below) and mammoth lodges, fell
nals, and drag wood over wide trails

Few animal signs are as conspicuous as an osprey's nest against the sky, and only by good detective work can the marks of the secretive be found.

Deer hunters will recognize these skinned saplings as buck sign—where newly-formed antlers were scraped to remove the velvet.

Like honeycomb, bluegill beds or nests are clustered in shallow areas and are often visible in clear water. When eggs are present, the males hover overhead to guard and fan them. These beds were left high and dry when the water level of a reservoir was lowered.

Trail of the hunter and the hunted. A shallow and wet tracking snow is the rabbit hunter's delight. Snow provides our most complete record of an animal's movements.

The underground path of a mole searching for food can be easily traced under a mantle of light snow.

This pattern of mouse tracks in snow offers a puzzle. What was the attraction of the stalk of grass? Was its buried top laden with seeds or did it serve merely as a landmark in a world of moonlight and glistening whiteness?

SCHOOL PAGE

Organize a Junior Wildlife Club

By LUNETTE BARBER

Now that December is here and the time is very near for mid-term examinations, and then a new half year's work, could anything be more stimulating and benefiting to boys and girls than having a Junior Wildlife Club function along with the regular school work? There are many advantages to having one. It helps to develop leadership; it teaches and puts into practice parliamentary procedure; it gives an opportunity to exert initiative; it offers chances for oral expressions; it promotes experience in using encyclopedias, references, and other materials; and it opens the way for program and project planning. Below is a simple constitution for a club.

CONSTITUTION OF A JUNIOR WILDLIFE CLUB

ARTICLE I—Name

Section 1. The name of this club shall be.....Junior Wildlife Club.

ARTICLE II—Motto

Section 1. The motto of this club shall be the "Conservation Pledge:"

I GIVE MY PLEDGE AS AN AMERICAN TO SAVE AND FAITHFULLY TO DEFEND FROM WASTE THE NATURAL RESOURCES OF MY COUNTRY — ITS SOILS AND MINERALS, ITS FORESTS, WATERS AND WILDLIFE.

ARTICLE III—Purpose

Section 1. To increase the knowledge of wildlife in North Carolina and its importance, and learn how to both use and conserve it.

Section 2. To foster and keep alive an interest in wildlife conservation.

Section 3. To promote activities which will lead to the development of better citizenship and sportsmanship.

ARTICLE IV—Officers

Section 1. The officers of this club shall consist of President, Vice-president, Secretary, and Librarian.

Section 2. The officers shall be elected by ballot and majority vote, for a term of..... (It is suggested that officers be elected at the end of 3 months in order to give more members a chance to preside.)

Section 3. The president shall appoint Committee Chairmen to serve for his (her) term.

ARTICLE V—Meetings

Section 1. Regular meetings shall be held on .....day, ... month.

Section 2. The order of business at regular meetings shall be as follows:

Roll call, Reading of the minutes, Unfinished business, New business, Committee reports, Project work, Main program feature, Announcements, Adjourment with all members reciting the CONSERVATION PLEDGE (Club Motto).

Section 3. Special meetings may be called by the President, or in his absence the Vice-president may do so.

ARTICLE VII—Duties of Officers

Section 1. The President shall preside at all meetings, or in his absence the Vice-president may preside.

Section 2. The Secretary shall keep a complete record of all meetings of the club, shall have charge of the correspondence, and shall keep a roll of the members of the club with their addresses.

Section 3. The Librarian shall provide for and keep the club informed as to magazines, bulletins, books, and other publications on conservation that are available in the school or city libraries or bookmobile, those for sale at local bookstores, gift shops or those that may be ordered.

ARTICLE VII—Amendments

Section 1. This constitution may be amended by a vote of two-thirds of the members.

After the club is organized, there are so many, many things that can be done it will be difficult to decide which to attempt. These are suggested: Establish a nature trail; build up a wildlife museum for the school; maintain a wildlife bulletin board in the school; set up a wildlife section in the library; beautify the schoolgrounds with wildlife plantings; establish a bird sanctuary; construct an electric wildlife quiz board for the school; make an aquarium for display in the school; raise earthworms for fish bait to use or to sell; plan and present conservation programs for chapel; prepare exhibits for fairs, merchants' windows, and school halls; write articles and reports of club activities for local papers; plant food patches at school and at home; visit a taxidermist, fur ranch, fur dealer or sporting goods store if convenient; know the wildlife protector in your county and the fish and game biologists in your district; study and practice outdoor safety and manners; make a good notebook for the club; keep wildlife calendars of birds and mammals; construct and erect *correctly* bird houses, feeders, baths, and squirrel boxes; make a study of fish in ponds, lakes, rivers, and reservoirs near by; learn about local pollution and non-pollution and siltation in your community; become familiar with your local watershed; subscribe to magazines, bulletins, and other publications for information; keep a "dead on road" record from day to day of wildlife killed on streets and road; photograph wildlife in the community; set up a dog control program in the area; study the biography and conservation works of John Muir, John James Audubon, Aldo Leopold, John Burroughs, Gifford Pinchot, Theodore Roosevelt, Hugh H. Bennett, Izaak Walton, T. Gilbert Pearson, Ernest T. Seton, and Franklin D. Roosevelt.

Wildlife club activities include conservation projects such as the building of bird houses and feeders.

PROTECTOR OF THE MONTH

Miles E. Forbes

Born in Avery County 31 years ago, Mr. Miles E. Forbes received his formal education at Newland High School in Newland, North Carolina.

After serving three and one-half years in the Army during World War II, Mr. Forbes was employed by the Motor Vehicles Department as a mechanical inspector in the post-war automobile inspection system. He later became Chief of Police in Blowing Rock, North Carolina, a position which he resigned in 1951 to attend the Wildlife Protectors' Training School conducted by the Institute of Government at the University of North Carolina.

Mr. Forbes is now stationed in Iredell County and resides at 932 West Front Street, Statesville. He is married and the father of two boys, aged four years and three months.

Enforcement Record for September

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of September, 1954:

Persons checked	**28,917**
Prosecutions	**553**
Convictions	**497**
Fines collected	**$4,584.50**

All fines collected are required to be paid into the school funds of the counties in which the convictions are obtained. Fines were not collected, being either suspended or not levied, in 38.23% of the total number of convictions.

It's the Law!

Question: Is a person under 16 years of age required to purchase a hunting license in order to hunt?

Answer: Ordinarily, yes. Unlike the fishing license law, the law pertaining to hunting licenses makes no general exemption in favor of minor age groups. The hunting license law does, however, make three specific exceptions in the case of minors:

(1) A person who is under 21 years of age and is a dependent may hunt on his parent's land without a license if his parent is a resident.

(2) A resident minor under 16 years of age may hunt under the license of his parent or guardian, provided he carries the license with him or is accompanied by the parent or guardian who has the license in his possession.

(3) A nonresident under 21 years of age may buy and use a resident hunting license if he is the child of a resident parent and is actually visiting such parent at the time.

MANAGEMENT

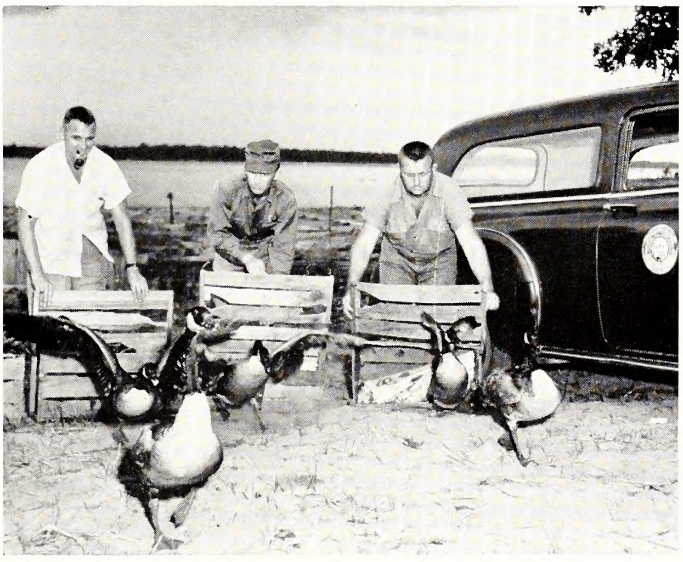
from page 9

for larger birds, but also supply insects needed by the young for rapid growth. Pasture plantings and planting of logging roads also provides green feed during the critical winter months (December, January, and February). Mountain rye furnishes an abundance of succulent grazing for deer in the coldest weather; clover and permanent pasture grasses (fescue and orchard grass) are also resistant to cold, staying green through most of the winter and providing food for many species.

Another very important deer management practice is browse cutting. This consists of removing a large percentage of the trees and shrubs, leaving only the better specimens of good timber species. These stumps sprout and produce a large volume of excellent browse. An added advantage is that these cuts can be located on steep slopes and ridges, where no other improvement is practical. The cutting of rhododendron has provided winter food for many deer. While rhododendron is not a balanced diet, deer can and do survive even when it comprises the largest item of their winter food. When large stems are slashed about half way through and then pushed over so that some of the bark and wood is still attached to the stump the tops stay green indefinitely and remain within reach of the deer.

CANADA GEESE FOR KERR RESERVOIR

Ten Canada geese march down to the waters of their new home. Below. Shipped from Lake Mattamuskeet, the geese are being released at Kerr Reservoir by (left to right) Charles B. Woodhouse, district biologist, N. G. Crews, Vance county wildlife protector, and David Evans, state park ranger.



During the past autumn, Canada geese winging their way southward over Kerr Reservoir were greeted by the calls of captive geese on Nutbush peninsula.

Ten wing-clipped geese were placed there by the Wildlife Resources Commission in an effort to attract migrating birds to a newly developed waterfowl management area—an experimental area designed for working out methods of attracting and holding waterfowl on impounded waters. The area contains about 250 acres of land which is leased from the Corps of Engineers and located on a slim peninsula jutting between Big and Little Nutbush creeks in Vance county. About 25 acres has been planted to wheat to provide succulent food, and more plantings are planned if the wintering goose population grows enough to warrant them. Hunting is prohibited within 300 yards of the refuge.

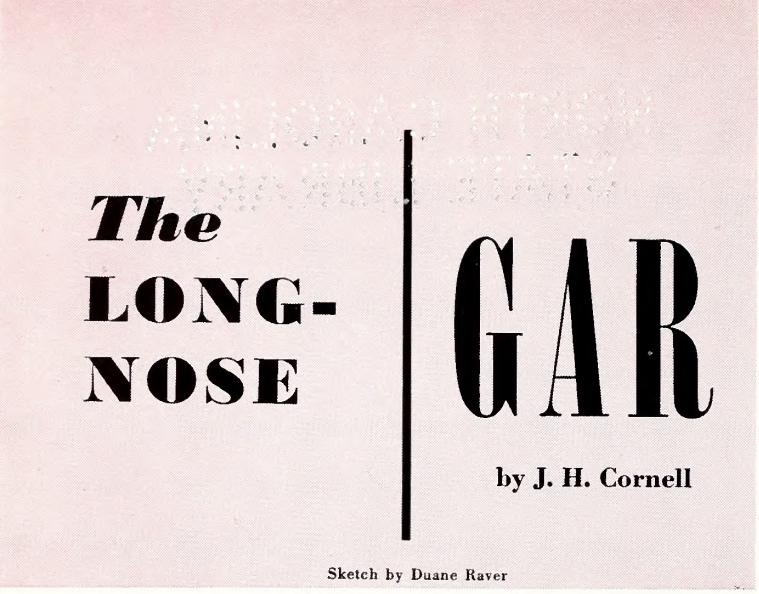
It has been found in waterfowl studies that if wintering birds can be attracted to a suitable area, they will continue to use the area in succeeding years with a steady population increase. Every Tar Heel is familiar with the story of Gaddy's Pond and its wintering geese. Perhaps the Kerr area is another Gaddy's Pond in the making. Already small transient flocks have been decoyed to graze in the wheat fields.

The young science of wildlife management has begun to stabilize. In the beginning, a production cure-all was sought—something that would solve the problem at one fell swoop. First, predator control was considered the answer, then the policies of the biologists went to the other extreme and many advocated no predator control at all. Then restocking was the thing, until its numerous disadvantages were discovered. Many then talked no restocking whatsoever. Biologists and sportsmen are now beginning to realize that there is no magic panacea but that a combination of many practices is necessary. Predator control should be used with discretion but very definitely has a place in management plans. Predacious species do not do as much damage as many sportsmen believe, but are more of a factor than some biologists admit. Restocking, while singularly unsuccessful where quail are concerned, has been very successful with deer.

The last, but one of the most important management practices, is the harvest. Many species, and particularly grouse and squirrels, are often underharvested. In areas where overpopulations occur, deer herds may require much heavier kills than the sportsmen think are necessary. The various sides of such measures must be carefully weighed to produce the longest possible sustained yield of these crops. There are sound reasons behind all wildlife management practices and regulations. Opportunities to explain them are always welcomed.

The LONG-NOSE GAR

by J. H. Cornell



Sketch by Duane Raver

There is no doubt that the long-nose gar is an undesirable member of our fish populations. Some authors say it is a "vicious predator," an "unmitigated nuisance," or describe it as the "shark of fresh waters." What fishermen have to say about it is seldom printed.

Like the bowfin or blackfish, the gar is a survivor from prehistoric days. Fossilized forms show that the gar was common in that geological age known as the Carboniferous Period when our great deposits of coal were being formed. The several species of gars are common in the Mississippi valley and southern United States. Those states bordering on the Gulf of Mexico seem to have the greatest concentrations. The long-nose gar is the only species generally found in North Carolina waters.

It is a cylindrical fish, with the dorsal and anal fins set well back toward the tail like a pickerel or jack. However, the gar has very long narrow jaws, in the form of a beak, which are armed with a formidable array of teeth. This snout, measured from the eye, is at least twice the length of the rest of the head. The fish is dark gray or olive above shading to silvery below. The tail and dorsal and anal fins have round black spots which are characteristic. To a lesser extent, similar spots are present on the posterior part of the body.

It is different from most of our fish in that it does not have overlapping scales. It really wears a suit of armor made of diamond-shaped plates covered with enamel. The plates are so hard that the pioneers covered the plow-shares of their wooden plows with gar skins so they would last longer. Indians in Louisiana regularly used the individual plates as arrow heads.

Habitat

The gar seems to prefer quiet waters, especially if they are more or less stagnant. Bottoms of silt or swampy ooze seem to be preferred. It is indeed fortunate that the gar does not show a preference for our best game-fish waters. He is a serious predator on all other fishes, but his preferred habitat never would support a large crop of game fish, even if there were no gar. The ranges of the gar and the game fishes overlap considerably, and without a doubt he does a lot of damage to the game fish populations, but it could be a lot worse.

There are many streams which once supported fine bass populations, but which are now dominated by gar. The gar, of course, gets the blame for eating all the bass—but another answer is at least a possibility. Years ago, that stream may have flowed over a hard sand and clay bottom. The watershed was forested and the stream ran clear and full. Gar did not choose to live in a habitat like that. Bass did!

When we needed more timber and more food for our increasing human population, the trees were cut and new fields were plowed. The stream bottom became silted and the bass could not build nests. There were flood waters in the spring, but in the summer there was little flow and stagnant pools developed. It became the kind of a stream the gar likes, and the gar moved in. It was no longer good bass habitat, and only a few could live there under the less favorable conditions. Then the gar ate some of the little bass and also cleaned up the bass food. That was the end of the bass fishing!

It just might be, in some cases, that the presence of gar is the result of changed habitat conditions, and that he moved in when the bass moved out. In addition to silted river bottoms and stagnant water conditions, increased salinity of coastal streams can have the same result. It appears that the gar can stand more salt than the bass.

And think about Florida's fresh water lakes. Most of them have some gar in them; but the water is fresh, the bottoms are hard sand rather than muck, and the habitat is suitable for bass. If you have fished there, you know they have some mighty good bass fishing in spite of the gar.

An example closer to home is our own Currituck sound. It has some of the finest bass fishing in the world. You seldom hear of a gar being caught, yet there is nothing to keep them out. Nothing but a habitat which is favorable for bass and unfavorable for gar. In those waters where the gar find conditions they like, and where they have become the dominant species, it may be that removing large numbers of them will bring back a population of game fishes. But even if all, or practically all of the gar can be removed, the number of bass will be always limited by the factors of the habitat.

Life History

In our waters, the gar spawns in late April and early May. The preferred site is on shallow-water bars, and the eggs are laid well up in the marginal vegetation. The eggs are adhesive and stick to grass, brush, and sticks while they hatch out without the benefit of a nest or parental protection. Before the young are two inches long they begin to prey on the fry of such other species as may be available.

There is a record of a nine pound female which contained over thirty-six thousand eggs. Smaller fish would have fewer eggs, but their reproductive potential considerably exceeds that of the bass. Like most other young fish, the food of the gar fry seems to be insect larvae or the minute aquatic animals such as water fleas. By the time they are as much as two inches long, however, their diet has changed almost entirely to the young of other fishes.

The adults, in eating larger fish, show a decided preference for fish which do not have spines in the dorsal fins. Minnows of two or three inches are a preferred food, and perch, bream, and bass are less generally eaten. This is understandable when we recall that the throat of even a large gar is narrow and constricted. He just cannot swallow a large fish. In our North Carolina waters, they migrate with the schools of "sprat" (mainly young menhaden) and feed on them almost exclusively when they are available.

The gar has trouble with his breathing, too. In the winter, when the water is cold and contains a lot of oxygen, he makes out pretty well. And at that time of the year, when he is in a sort of hibernation, he does not need much oxygen, either. But when summer comes it is a different story. He requires more oxygen to live, and the warmer water holds less of it. Then he has to come to the surface and breathe air directly.

Back in the Carboniferous Period, from which he was one of the few survivors, a wise providence arranged for him an unusual air bladder. Instead of being just an air sac like most fish have, the air bladder of the gar is cellular in structure—very similar to the human lungs. When he cannot absorb enough oxygen through his gills to keep him happy, he just comes to the surface, blows out a big bubble of stale air, gasps a new supply of fresh air into his lung, and swims away contentedly. Back in the Carboniferous Period, when much of what is now eastern United States consisted of tremendous stagnant swamps, this special breathing apparatus permitted the gars to survive.

Importance

The gar is important to the sport fishermen because he is a vicious predator on any small fish he can find—including the desired game species. To the fisherman, he contributes neither food nor sport. He just remains an undesirable member of the fish community.

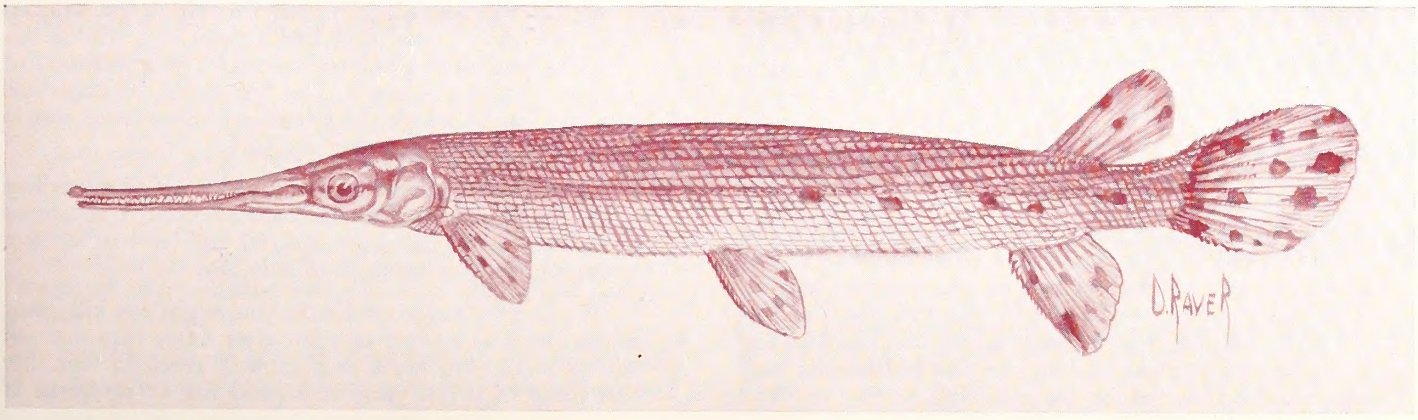
So far as the sport fisherman is concerned, reducing the numbers of gar in the public waters is a matter of great importance. Haul seines can be used effectively only on sand bottoms and in the winter when the gar are concentrated. Gill nets do a better job of collecting them—particularly nylon gill nets, dyed black and fished at night. The difficulty is that the cost of the nets makes their use financially prohibitive on a large scale when it is considered that gar have practically no commercial value.

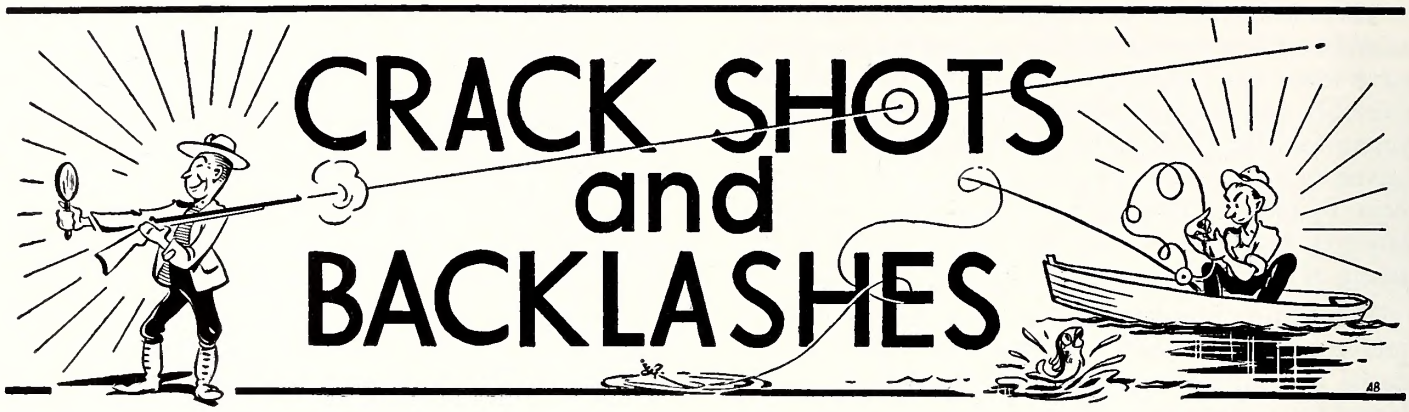
Pound nets and wire traps will take some gar, but those devices are not selective and all species of fish are prone to be caught. Some work has been done on the use of electric currents of different characteristics in an effort to provide a selective method of killing gars and leaving the other fish unharmed. The time may come when this method will be developed to a point where it will be effective and useful on small bodies of water.

In the large rivers and sounds of eastern North Carolina, however, any mechanical method will prove futile. The only hope lies in creating a use either for the skin or the flesh which will lead to a large-scale commercial fishery for them. Their numbers will be effectively reduced if and when the commercial fishermen find it sufficiently profitable to harvest the crop.

Until that time comes, sport fishermen can have some fun and also contribute to good conservation by helping to remove some of the gar population. In the Gulf states, it is considered great sport to take gar by hook and line. The gar has such a hard and bony mouth that the ordinary fish hook seldom will penetrate enough to keep the hook from being thrown. Their method is to make a running noose of brass wire and attach it to the end of the fishing line. A bait of fish or meat is attached to the bottom of the loop. In taking the bait, the gar pulls the noose tight around his long and toothed upper jaw. From there on it is strictly rough and tough. Did you ever try ten pounds of mad gar on the end of a casting rod?

The long-nose gar closely resembles its ancient ancestors. Some authors describe it as the "shark of fresh waters."





DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

December is a season of holiday spirit—and holiday expenses. Snow, cold, blustery winds. Kids sliding down hill on sleds. Apples roasting over the coals, and the splutter of popcorn popping on the kitchen stove. It is a month for indoors—and outdoors. In December the seasons are open on nearly every game species of the book, and this year the greatest number of hunters in Tar Heel history will be out in the woods and fields and marshes harvesting Nature's bountiful yield.

* * * *

A change has been made in the staff of WILDLIFE. Luther Partin, who has done considerable writing and layout, took a job teaching school at Bethany School, Reidsville. He has promised to supply us with articles from time to time. Replacing Partin is a young man from Durham named Jim Lee. Jim formerly headed up the Children's Museum there. He has a master's degree in forestry with a good background of wildlife management. He prefers writing, photography, and work with youth groups to technical forestry. Welcome aboard, Jim!

READER'S DEPARTMENT

Dear Sir:

"I have a suggestion to offer in regards to the conjested line up and signing in at the checking stations during open trout season.

"That is, to sell a ticket for each days fishing similar to the old permit, with the printed types of fish in a stream on the back and a place for the fisherman's name, etc., for your records. This ticket is to be issued in the same manner as the old permit and returned at the days end or when a fisherman quits; except, all the writing is to be done as the fisherman returns and exchanges for his license which he has left in place of his ticket. As you know the writing which is necessary can be done over a period of time that the fisherman is fishing instead of an hour or so the first thing every morning. The number of fish caught could then be checked according to species and weight printed on the back of tickets. These tickets could be printed of certain colors for certain areas and just large enough to carry in a wallet and still be of sufficient size to keep your records on the back and save the time before going fishing.

"If you have ever waited in line during holidays, week ends, or arrived a few minutes late you know just what I am trying to put across. However, if you want to change the station keepers (checkers) to a blonde of the fairer sex, we won't mind waiting. That is another point, really, I believe this idea can be put into use for the benefit of the fishermen and for the commission as well. This plan may need some adjustments or refinements from your department. As you know, a fisherman is full of business for the first hour after the zero hour of open days, and it can be very exasperating standing in line for an hour or so getting signed up.

"Hope your experts will agree and help alleviate this situation before next trout season opens. Thanking you, I remain

Yours very truly,

Robert F. Gause"

With the possible exception of the idea about blonde checkers, officials of the Wildlife Resources Commission think enough of reader Gause's idea to give it serious consideration. If operation details can be worked out, the idea will go into effect, probably next spring.

"Dear Sirs:

"On the back cover of October Wildlife under "Marks of a Good Sportsman" you have one caption reading "He will not shoot into Squirrel Nests." Why not add to that, "or Shoot Squirrels With A Shotgun." Or better yet let's pass a law forbidding the use of the shotgun on squirrels.

"About five years ago I was invited to go squirrel hunting with a friend that had a good dog. He used a .22 rifle with such good results that I was ashamed of my big automatic shotgun. The first three the dog treed happened to be where the friend could see them and in three shots he had as many squirrels.

"The fourth squirrel was in the tip top of a medium sized tree where both of us could see him. I borrowed my friend's rifle, killed the squirrel and have never shot at another with a shotgun to this day.

"If you have never used a .22 you might not kill many to start with as was my case but after a few trips out you will probably kill more as a .22 will reach farther. My first three trips last year were good for 17 squirrels. If

you don't get one squirrel it is more fun, just shooting at them with a .22. Doesn't it seem absurd for a great big man shooting at a pitiful little squirrel sitting absolutely still with a great big shotgun?

A Reader"

(Name withheld on request—Ed.)

"Dear Sir:

"Enclosed is fifty cents for the renewal of my WILDLIFE IN NORTH CAROLINA. I enjoy it very much, it is the best magazine buy I know of.

"I have a question I would like to have you clear up for me. About two months ago a friend and I were fishing in Kerr lake about three miles beyond the Townsville landing. My parents noticed a strange looking object about the size of a nickle swimming near the surface of the water. We caught it and put it in a glass of water and found it to be a white jellyfish. Please explain to me how it got in the lake and how it lived after it got there.

Sincerely,

James L. Tart"

There are a number of species of fresh water jellyfish, and this one is probably one of these. The appearance of jellyfish in Kerr Reservoir cannot be blamed to Hurricane Hazel, since this one was found before the big blow.

"Dear Sir:

"How about printing a small article about bream? Here are some of the questions I have. People seem to call everything that swims around here, bream—especially blue gill. Just what is a bream? How fast do they grow? In two years could they weigh one-half pound in the average pond. Just how big do they grow in this locality?

"Any answers you might give would be appreciated.

A bream fisherman,

Doildeen French"

Fish expert Harry Cornell wrote the following letter in response to Mr. French's inquiry on bream.

"Dear Mr. French:

"We will try to answer your questions about bream in sequence. The word "bream" has different meanings in different parts of the country, and even in different parts of North Carolina. To some fishermen it means all the pan fishes in general, including crappie, rock bass, perch, and the like. In other places it means just the sunfish group of which there are several species. To most of our fishermen, however, the word "bream" means specifically the blue bream or bluegill sunfish.

"Their growth rate depends on the food supply and on the length of the growing season. In a new pond where there is little competition for food, it is entirely possible for them to grow to a weight of one-half pound in a year. In ponds where the population has reached the limit of the food supply, they frequently become stunted for lack of food and die of old age without ever reaching a size of more than three or four ounces.

"Being a bream fisherman, we are sure you agree with us that whether they are large or small, fishing for them provides wonderful sport, and successful fishing for them provides a wonderful dinner."

Best wishes,

J. H. C.

Box 906
Sanford, N. C.

Dear Sirs:

For quite a while I have been writing little short stories and articles for the benefit of myself. I have never sent any of the stuff off, or tried to have it published. This is my first try.

I am fifteen years old and live in Sanford. I have lived in many other places in the United States but like North Carolina the best. Ever since I was a small boy I have had an interest in wild life. I have worked in The Children's Nature Museum in Charlotte and have been on television with them quite a number of times. My main interest is in snakes, but I like all wild life.

This summer I spent six weeks in the mountains in the western part of the state and enjoyed it a lot. The woods and mountains are a lot more beautiful than any building is or ever will be. I had time to think and to write this about the mountains, trees, fish, deer, and the bears.

I hope you will be able to publish it in the hope that people will see and understand the beauty of nature.

Yours very truly,

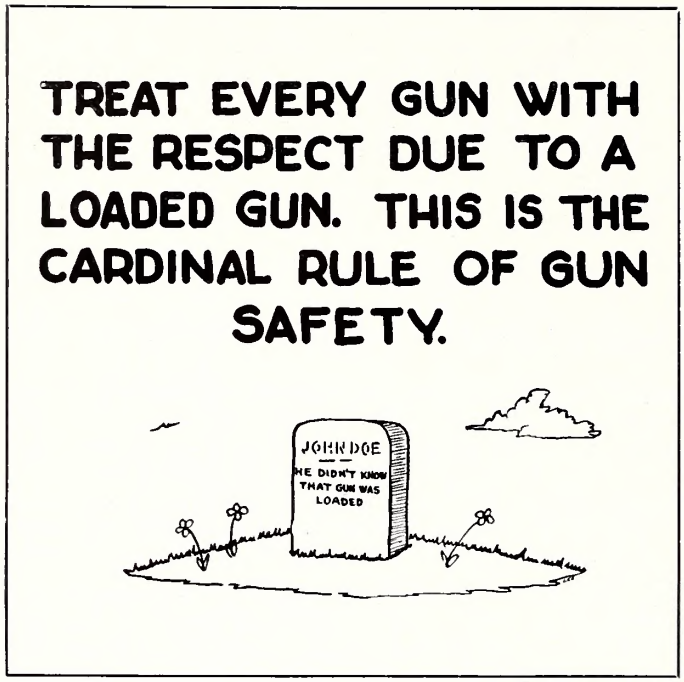
Jeffrey M. Tracy

JMT:mw
Encl.

The warm sunlight falls on the cool clear mountain stream that runs between the tall green pines. The sweet song of the cool brook, the cool smell of the pine trees needles, and the whisper of the soft wind in the trees, all blend to make peace. A trout leaps high in the air to catch the butterfly that was dancing on the

Ailing Dove Seeks Help

When biologist Ben James visited the Commission offices recently, he found a very sick mourning dove on the doorstep. Suffering from trichomoniasis, an often-fatal protozoan disease, the dove was beyond help. Commission biologists are always interested in the prevalence of disease among game species.



Staff Cartoon by Lee

water like a dancer on a mirror. The ripples grow in ever widening circles to meet the bank. The bank is lined with cool ferns and a splashing pattern of brightly colored flowers.

The ferns part and a doe and her fawn splash recklessly into the water. The doe and fawn are happy. They romp and play like two fawns instead of mother and daughter. Suddenly they stop as mother bear and her two cubs enter the clearing. The deer leave and the mother sends her two cubs up the tree while she watches the silvery trout as it dances and splashes on the surface of the water. Again the trout jumps, a little closer this time. Again the old bear looks on with interest. Another jump but the trout never hits the water again. The old bear's paw was faster than the fish and dinner is served.

Cruel as it seems, this is the way of life. The trout hunts the butterfly, the bear hunts the trout, and man hunts the bear, but there is no man. The old bear has finished her dinner and the cubs come down out of the tree and together they leave the quiet pool to wander off in search of more food. The pool is quiet, but suddenly a small trout leaps into the air. Yes, there are a dozen trout leaping. The bear killed what he needed; he did not kill for sport the way man does.

The warm sunlight falls on the cool mountain stream that runs between the tall green pines. The sweet song of the cool brook, the cool smell of the pine trees needles, and the whisper of the soft wind in the trees, all blend to make peace.

Conservation by Mail

Natural resources are evident to the people of Canada. Today a letter was received in the mail with three stamps to cover the postage. The first stamp was a 20c stamp depicting the pulp and paper industry of the Canadian woods. The second was a 7c stamp showing a Canada goose in a regal flight (perhaps on its way to the wintering grounds of eastern North Carolina). And the third stamp, a 10c stamp, showed a native tending to beaver skins being cured on the characteristic oval stretcher.

Wouldn't it be worthwhile if our country saw fit to have a series of stamps printed (for everyday use) which would bring to our people the visual importance of conservation of natural resources.—*Bill Hamnett.*

"Dear Sir:

"Please renew my subscription. I don't want to miss a copy. This is one magazine that I read from cover to cover and then start all over.

Thanks,

E. W. Pike

Beaufort, S. C."

Thanks!—Ed.

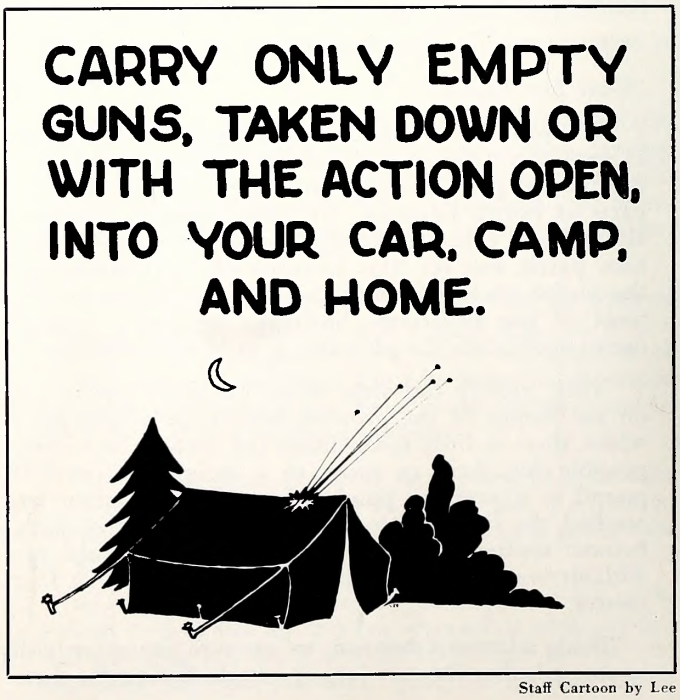
The American short-tailed shrew is the farmer's friend. It is death to insects and rodents, for its saliva glands contain a poison similar to a cobra's.

* * *

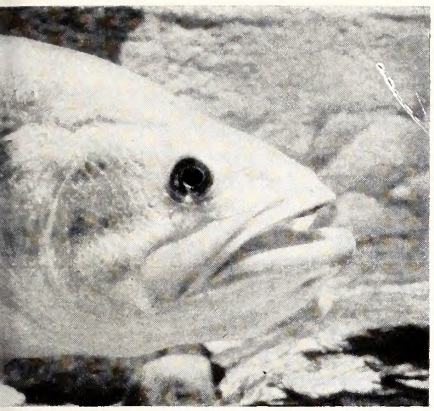
The Helenas hummingbird of Cuba, 2½ inches long, is the smallest bird in the World. The Calliope hummingbird of the high western mountains is the smallest in the United States, measuring a scant 3 inches.

* * *

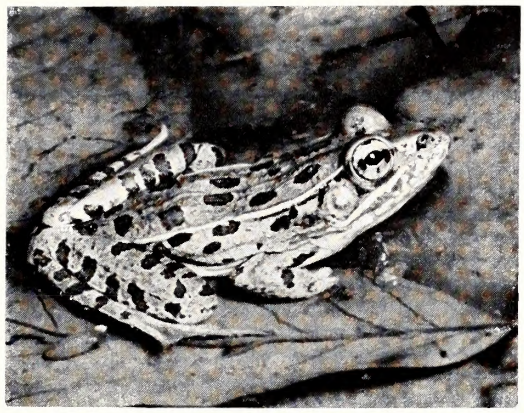
The temperature of a cricket can be counted by its chirps. In degree Fahrenheit, it is roughly equal to the number of cricket chirps per minute divided by four and added to 40.



Staff Cartoon by Lee



1. Draw a perpendicular line from the back of the eye past the mouth. Then, if you know your fish, you can call this bass by name.



2. The ——— frog is more often heard than seen. Its voice, like sounds produced by rubbing a wet balloon, and its spots are distinctive.

3. The long bill and tail are clues to this bird's identity. It is a common bird of farm and garden, and some say its song is superior to the mockingbird's.

4. This live-trapped whitetail deer is in quite a predicament. It can't move, and a strange instrument is being forced into its mouth. There is a definite purpose behind the activity, however, for a thorough knowledge of herd composition is important to good deer management. What are these biologists doing?

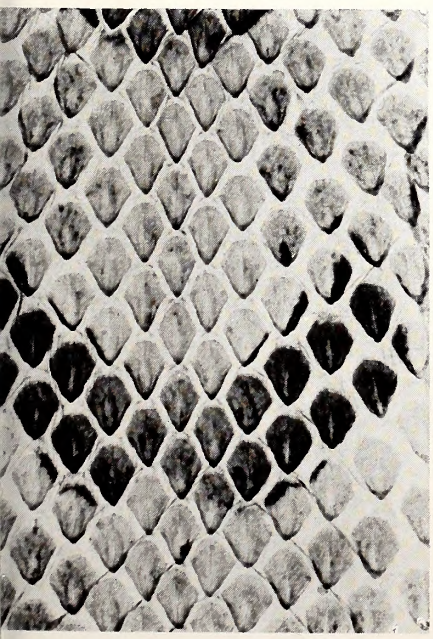
Nature PHOTO QUIZ

by Jack Dermid

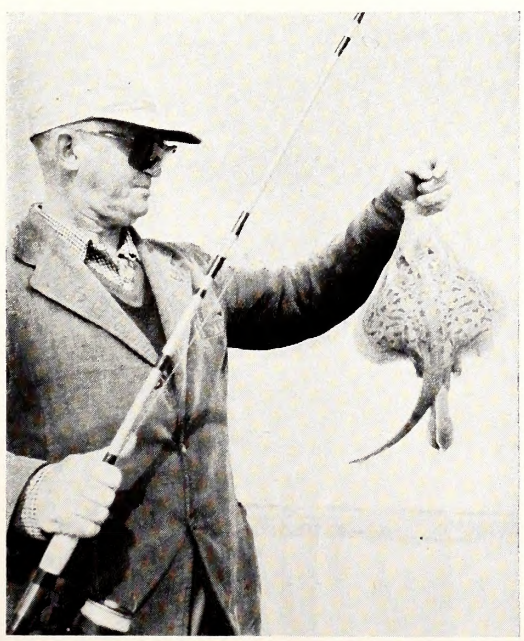
There are thousands of wild animals and plants in North Carolina and millions of facts in the store of knowledge about them. There is so much to know about the out-of-doors that no person could learn it all in a hundred lifetimes. But everyone should be familiar with some of the common species and their ways of life. It is fun to be able to call a plant or animal by its correct name; but, more important, a basic knowledge and understanding of nature is necessary for the wise use of wildlife and other renewable resources.

Take this simple test. Then judge for yourself how much you know and how much you should know. Turn the page upside down for the answers.

5. There are many patterns in the world of nature. This is a difficult picture to identify, but a thoughtful guess might be correct.



6. Few fishermen who frequent the surf and ocean piers will have trouble naming this critter. Clues: it is harmless and not a sting ray.

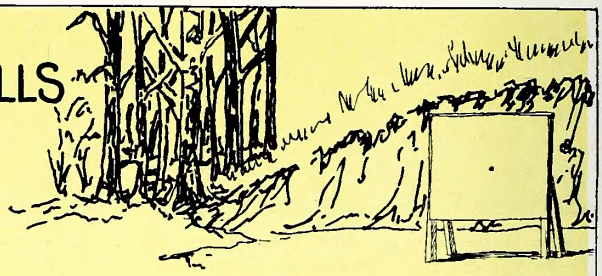


7. The farmer whose cornfield was raided can identify the culprit by the sign it left. What ate this ear—bear, squirrel, or raccoon?

Answers: 1. Largemouth bass. 2. Leopard frog. 3. Brown Thrasher. 4. Determining the age of the deer by checking the condition of its teeth. 5. Snake skin (from timber rattlesnake). 6. Skate. 7. Squirrel. Bear or raccoon would have broken down stalk or at least pulled down the ear.

KNOW YOUR GUN — PATTERN IT

KNOWING YOUR GUN-THE SHELLS AND SHOT IT SHOOTS BEST IS WORTH DAYS ADDED TO YOUR HUNTING SEASON



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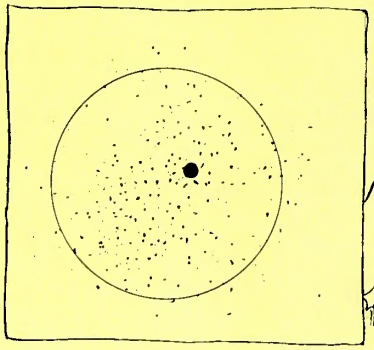

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7½	350
6	225
5	170
4	135
2	90
BB	50

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Wildlife
IN NORTH CAROLINA

TEN CENTS JANUARY · 1955

Photo by Jack Dermid

Bruin up a Tree

This picture is published for the benefit of those bear hunters who were not lucky enough to meet bruin face to face during the past hunting season. Although the bear looks like a fair target, it was only a 40 pound cub-of-the-year and would have provided the hunter with lively comedy instead of thrills and danger. It was an expert at begging for a handout of food, climbing trees with reckless abandon, or, to the photographer's dismay, sneaking off to the thickest laurel thicket in the Daniel Boone Wildlife Management Area for a snooze.

Wildlife IN NORTH CAROLINA

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A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

LUTHER H. HODGES
Governor

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COVER

During recent years, the decline in pelt prices and trapping pressure has been favorable for Tar Heel raccoons, and the masked rascal of our bottomlands is providing more and more sport for lovers of hounds, moonlight, and the chase. Painting by Al Barrett.

☆ ☆ ☆

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Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Jim Lee ..... *Editorial Assistant*
Anne Taylor ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all materials published.

☆ ☆ ☆

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IMPROVING

SMALL GAME RESOURCES

by **Bob Hazel**
Game Management Specialist

Part I

When this article was being written, another army of Tar Heel quail and rabbit hunters was preparing to take to the field in pursuit of their favorite quarry. What would they find? Would game be plentiful or scarce? According to kill statistics gathered during the past several seasons, these hunters could be expected to harvest in the neighborhood of two and one half million rabbits and one and one half million quail during the period between Thanksgiving and January 31. These figures may come as a surprise to some, and they point up the fact that hunting in North Carolina is good compared to many other states.

Perhaps we should count our blessings and be well pleased. However, even though statistics gathered over the past several years do not show a downward trend at present, there is no denying the fact that hunting today generally is not as good as it was in what is often referred to as "the good old days."

Before we can undertake a discussion of what needs to be done to improve our game supplies, we must understand the reasons for the comparative scarcity of game. When we contrast the type and amount of farming being done today with that of several decades ago, the reasons become obvious. While the number of farms in North Carolina has not increased greatly in the past twenty years, the kind of farming has changed considerably. In 1934 there were 1,684,000 cattle and hogs on North Carolina farms; in 1954 there were 1,996,000, an increase of 20 per cent. The present decade has often been called "the era of the bulldozer," during which thousands of acres, many of them fencerows and odd corners which formerly grew up into weeds, brush, and trees, were cleared and put into pasture or intensively cultivated row crops. Along with this, more of the cleared acres of land are farmed every year, rather than a portion of them left idle or "fallow" for a year between crops, as used to be standard farm practice. All of this means that we simply do not have as much suitable habitat for game as we had several decades ago, and this, along with a vast increase in hunters (as shown by license sales statistics in recent years), means less game for each sportsman who goes into the field.

Predators, such as this Cooper's hawk, are not a serious problem to game populations where adequate food and cover are available.

What are the answers to this problem? How can we produce game in spite of the adverse factors mentioned above? Most hunters consider themselves to be experts on game management, and each has his favorite theory which he feels is certain to solve the problem. These theories range all the way from restocking, predator control, and shortening of open seasons to such things as planting food and cover for game and reimbursing the landowner for natural food and cover which he leaves for game. Let us consider some of these theories to determine which are practical and which are not.

First, let us consider the matter of restocking our lands with pen-reared game or game trapped and brought in from other areas. Hundreds of attempts at this have been made in this state and others, both by sportsmen and state conservation agencies. These attempts have almost universally been dismal failures. They indicate that restocking is entirely impractical for two reasons: (1) the cost of such ventures is entirely out of reason; and (2) restocking does not help to increase the game supply, in fact it sometimes makes

How can we save and improve our small game hunting in the years ahead? Here's the answer—a story of what is being done and what *more* can be done to manage North Carolina's small game resources. See next month's *Wildlife* for what you can do as a sportsman or landowner.

the situation worse. To illustrate the point, let us look at some of the published findings of restocking studies which have been conducted by game authorities. A detailed and comprehensive quail study carried on in Indiana brought forth the following conclusion: "If all the released birds had fared as well as the best group studied, they would have equaled about 0.6 per cent (i.e., six birds per thousand released) of the average yield with a cost of approximately forty-one per cent of all the revenue derived from license holders who hunt quail." This is certainly not a paying proposition for the sportsman.

A Missouri study was made in which wild-trapped, adult quail were encouraged to adopt hatchery-reared quail chicks, and the birds were released in areas which were later hunted. Their report states "the survival of adopted young birds, as measured by the harvest returns of this investigation, was very small (1.1 per cent return). A return of eight per cent of the wild-trapped, adult quail released on test areas is the highest survival demonstrated by this investigation. On the basis of estimates, the cost of harvested birds totaled $50.26 per chick, and $37.63 per harvested adult, banded bird." A report from Alabama states that "each pen-reared quail bagged would cost $315.00. These quail cannot care for themselves in the wild, and their release actually may result in lower, rather than higher, populations." The State of North Carolina some years ago operated a game farm and carried on restocking efforts with equally costly and negative results. As pointed out in the April 1954 issue of WILDLIFE IN NORTH CAROLINA (letter to Dear Joe), it would cost *six* times the total amount of the annual budget of the Wildlife Resources Commission to carry on a quail restocking program whereby one pair of quail could be stocked for each Tar Heel hunter. From all this evidence, it is clear that restocking is not the answer to our game problems.

Another favorite theory held by many is that predator control is the answer to our game problems. We repeatedly hear the statement "the foxes are getting all the quail and rabbits." On the other side of the fence, you hear arguments that predatory species eat only worthless species, such as mice, or that the only game animals taken by them are individuals who are old, sick, or otherwise of no value as game animals. Who is correct? Exactly what is the situation?

One basis of judging the amount of damage done to game by predators is the huge amount of food habits information which has been gathered by scientists who have studied the predatory species. These studies present overwhelming evidence that in almost all cases the amount of the predator's died made up by game species was very small or almost negligible. On the other hand, those who are familiar with predators and their habits will not deny the fact that a fox, a hawk, or an owl will capture and eat a game animal or bird if he gets the chance, or that he might even prefer a meal of game to his steady diet of mice, insects, or carrion. The crux of the argument—and this is borne out by numerous scientific studies—is the fact that, except in isolated instances, predators are not a controlling factor or even a serious detrimental factor with regard to game

•——————See SMALL GAME Page 17

Repeated failures in stocking programs have indicated that the most dependable and economical source of game birds is from wild nests.

Photos by Jack Dermid

Chain PICKEREL

by J. H. Cornell

The members of the pike family are considered the tigers of our inland waters. The chain pickerel, or jack, is no exception. It has such a voracious appetite that life is very difficult for its smaller neighbors—and impossible for many of them.

This almost insatiable hunger makes the pickerel a most cooperative quarry for the sport fisherman. Except in midsummer, when the food supply is most abundant, it can be induced to take a passing spoon, plug, or streamer fly, much more readily than a bass or walleye. Unfortunately, the distribution of this species is limited by its very specific habitat requirements, and attempted introductions into unfavorable situations never seem to be successful.

The chain pickerel, frequently known as the eastern pickerel and the jack, belongs to the pike family. The largest member of the family is the muskellunge, a sub-species of which is native to the Ohio river system and is represented in North Carolina by occasional specimens taken from the French Broad and Little Tennessee rivers. Next in size is the northern pike, which is generally distributed in suitable waters throughout much of the world, but is not found this far south. The smallest members of the family are the pickerels, of which there are two species in North Carolina. The chain pickerel is an important game fish, but the little barred pickerel or "red-fin pike" is not often sought because of its small size.

The chain pickerel is dark green to black along the back, shading into a brownish-green on the upper sides, and into a yellowish-green on the lower sides and belly. A chain-like pattern is formed by a network of dark lines along the sides, which accounts for its common name. The scientific name, "Esox," was a name given by Pliny, the Roman naturalist, to some fish of his day. Today it is the generic name of all the pike family. "Niger" is the latin word meaning "dark." And so we can figure out that the scientists have named the chain pickerel the "dark pike."

It is a long-bodied fish with fine scales, and with long jaws armed with an imposing array of formidable teeth. The single dorsal fin is set far back on the body toward the tail, directly over the anal fin. There are fourteen rays in the dorsal fin, thirteen in the anal, and about one hundred twenty-five scales in the lengthwise series.

The muskellunge, which is quite similar in appearance, has seventeen rays in the dorsal fin, fifteen in the anal, and about one hundred fifty scales in the lengthwise series. However, the easiest way to separate the two species is by the fact that the lower half of the cheek and operculum or gill cover is naked in the muskellunge, but both are entirely scaled in the pickerels.

The barred pickerel, or "red-fin pike," has the typically scaled cheeks and gill covers of the chain pickerel. However, it has only eleven or twelve rays in the dorsal and anal fins and about one hundred eight scales in the lengthwise series. Probably the easiest way to identify it is by the eighteen or twenty distinct curved blackish bars on its sides, and by the reddish color of the paired fins.

Habitat

Of these three members of the pike family, the muskellunge is by far the largest, reaching a length of four feet in our western rivers. Much larger specimens are found farther north. It is indeed unfortunate that the heavy silting of the Little Tennessee and the intense industrial pollution of the French Broad have almost exterminated this fine game fish in our waters.

The barred pickerel is a little fellow, seldom exceeding a foot in length and a pound in weight. It is found in the streams and swamps of the coastal plain where the waters are clean and carrying neither silt nor pollution. Weed beds are a necessity to its way of life, and it seldom is found in waters where they are lacking.

Intermediate in size between its two relatives is the more generally distributed chain pickerel. Good specimens run from twenty-four to thirty inches long and four or five pounds in weight. They are located generally in the eastern and southern parts of the state where the habitat conditions are suitable. The preferred waters are sluggish streams and the bays and coves of lakes. In any case the waters must be free from silt and pollution, and extensive weed beds are a requirement. Cattails, rushes, lily pads, and pond weeds, in water only a few feet deep, are home to the pickerel.

Life History

Unlike the bass and bream which build nests and guard their eggs, the chain pickerel drapes its egg strings over any available vegetation and goes on its way with never a care for the welfare of its offspring. Spawning activities begin when the water temperature reaches forty-seven or forty-eight degrees. The fish move into shallow coves, inlets, or pools in a slow-moving stream where weed beds are available. A

female, accompanied by one or more males, swims a meandering path and eggs and milt are cast at intervals along with much tail lashing which tends to distribute the eggs over a large area.

The eggs are in yellowish sticky strings which adhere to submerged plants, bushes, or branches. Any which happen to fall on a silted bottom settle into the mud and suffocate. Even eggs falling on a hard bottom, or the egg strings on the vegetation, could be destroyed by a film of mud if the water became turbid at any time during the hatching period.

It probably is this very factor of clean water which restricts the range of the pickerel to the clear swamp-fed streams tributary to the sounds in the east, and to the clean black-water lakes and streams of the southeast and the sandhills. The rivers and reservoirs of the Piedmont section might be greatly benefited by the introduction of this game fish. The sportsmen surely would welcome it. But until the soil is kept on the land, and until the waters stop turning yellow every spring, the pickerel could not spawn successfully. Some of the Piedmont reservoirs are so polluted and so silted that they cannot even develop stands of submerged vegetation.

In view of the lack of parental care for the eggs and young, it is indeed fortunate that the chain pickerel is a prolific spawner. A two pound female will lay about thirty thousand eggs. Depending on the size of the fish, we might expect the numbers to range from about twenty to fifty thousand with thirty thousand as a fair average.

The fry compete with the young of other fishes for the food supply. Favorite foods are the aquatic larvae of insects such as midge flies and May flies. At fingerling size, they feed extensively on the fry of other fishes which have spawned somewhat later. When it is considered that a three-inch pickerel can eat a one-inch sunfish, and that the sunfish spawning temperature is some twenty degrees above that of the pickerel, it seems that nature has provided for an adequate time to lag so that the pickerel will have fish of the proper size available for dinner.

Larger pickerel go on a diet which is almost exclusively fish, varied only occasionally by a frog, crawfish, salamander, or water snake. Small suckers usually are a preferred food, but in the Albemarle Sound region they feed almost exclusively on alewives when they are available.

Even in the presence of an adequate food supply, the growth rate of the pickerel depends on the length of the annual growing season. Like many other fish, the growth rate decreases in more northern waters. In a cold water pond, the Massachusetts Fish Commission reported a growth rate of two and one-half pounds in six years. Under optimum conditions, a growth rate of five pounds in three years is reported. In North Carolina, we might expect a growth rate of slightly over a pound a year.

Importance

Rarely are both chain pickerel and black bass abundant in the same lake or stream. One exception to this general statement was a cold clear lake, one end of which was quite deep, lacking in vegetation, and with gravel bars around the margin. The other half of the lake was only a few feet deep and had numerous weed beds. The pickerel lived in one end of the lake and the bass in the other. They were separated by the habitat conditions, and good populations of both existed.

In general, though, in waters where either might live, the two species compete for food and cover. The pickerel is much more voracious than the bass, and usually reduces the bass population by its presence. Pickerel should be introduced in good bass waters only after the most careful consideration of all the factors involved.

Typically, the pickerel hides in a bed of weeds with just its head protruding. From this point of vantage

•——————See CHAIN PICKEREL Page 22

A chain-like pattern formed by dark body lines gives the chain pickerel its name. Sharp teeth and large mouth make this fish a vicious predator of the underwater world.

Illustration by Duane Raver

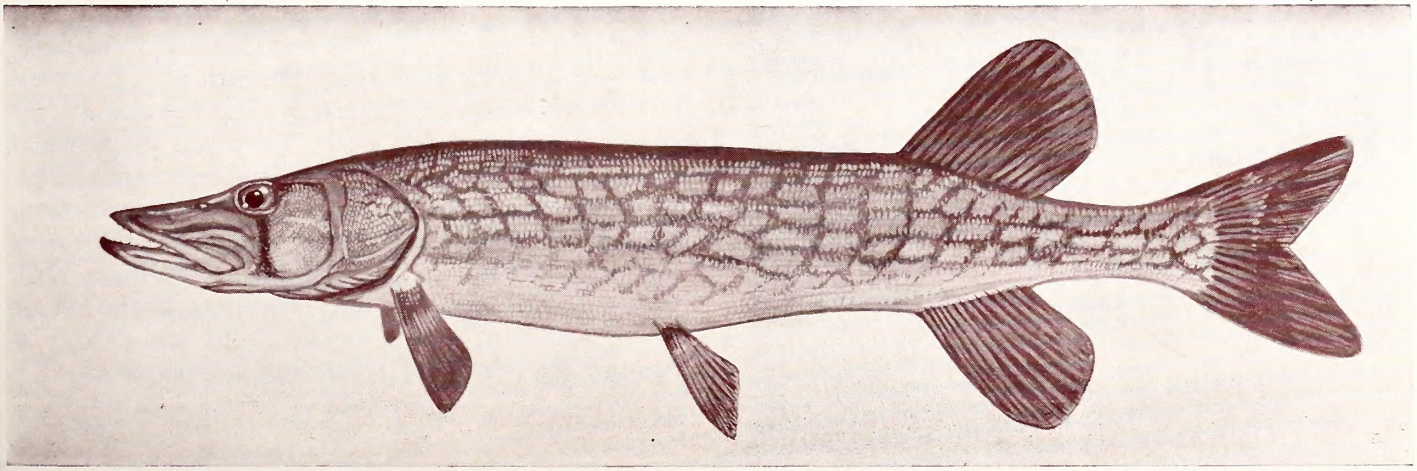
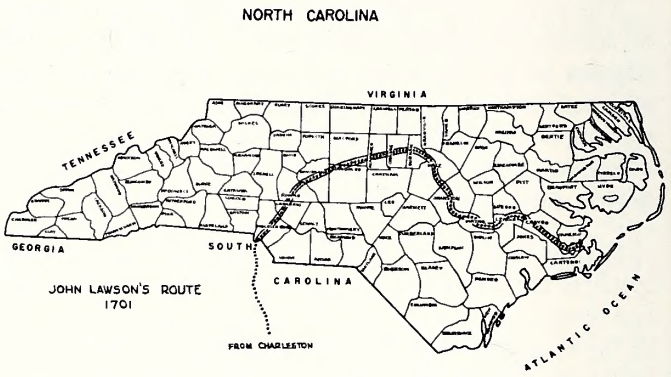


Photo by Jim Lee

Morning mists rising from the murky Neuse River typify the sluggish meandering streams that John Lawson followed for most of his historic journey to the ocean.

NORTH CAROLI



"The Raccoon is of a dark, grey Colour. If taken young, is easily made tame; but is the drunkenest Creature living, if he can get any Liquor that is sweet and strong." So John Lawson, first historian of North Carolina, described the fun-loving 'coon. Lawson, the son of an English gentleman, made a remarkable journey through North Carolina in the year 1701, describing the Indian tribes, the plants, animals, and other natural resources of the colony. His account, first printed as part of a collection, was independently published the following year under the title of *A New Voyage to Carolina; Containing the Exact Description and Natural History of that Country: Together with the Present State thereof and a Journal of a Thousand Miles, Travel'd thro' several Nations of Indians, Giving Particular Account of their Customs, Manners, &c.* by John Lawson, Gent., Surveyor General of North Carolina. London: Printed in the Year 1709.

Lawson arrived in Charleston, South Carolina, in 1700, having decided to see the new country. A gentleman by birth, he was well-educated and had an inquiring mind and the means with which to indulge it. Soon after his arrival he joined a party traveling to the central part of North Carolina, then a wilderness area. Leaving Charleston a few days after Christmas in the year 1700, the group traveled northward by canoe to the mouth of the Santee River, and then journeyed up that river and the Wateree River, entering North Carolina in the vicinity of the present Lake Catawba. Extending through the Piedmont of North Carolina from the English settlements in Virginia was the famous Indian Trading Path, a main route for travelers of that time. When Lawson's party reached the Trading Path, they left the stream that they had followed and continued their journey overland. They followed the Trading Path to a point near the present town of Hillsboro, where some of the party took leave of Lawson and continued on to Virginia, while Lawson and one friend visited the inhabitants of Achonechy Town. This village, on the Eno River near Hillsboro, was the home of a well-known Indian friend of the English, Enoe Will. In describing the village, Lawson mentioned that the Indians brought them fat bear and venison and that the cabins were decorated with a tapestry of bear and barbecued and dried venison. The area between Achonechy Town and the Haw River was described as being the "Flower of Carolina, the English only enjoying the Fag-end of that fine Country." This area, now covered with pine trees, was then a virgin forest of oaks and hickories. Lawson pointed out that a large pine that he saw at Achonechy Town was the first that he had seen in some one hundred and twenty-five miles. The traveler coming from Charlotte by way of Concord, Salisbury and High Point sees much of the area that was then without any pines. Led by Enoe Will, Lawson continued down the Eno River to the Neuse River, and then along the banks of the Neuse to Pamticough (Pamlico) where the journey ended.

TRAVELOGUE

. . . A. D. 1701

by Jim Lee

After describing his journey through the interior of the colony, Lawson gave a summary of the natural resources. He lists the grains, fruits, and vegetables, commenting that he never saw one acre of land managed as it should be, indicating that soil conservation was not practiced by the settlers. In writing of the trees and shrubs, he notes that "Dogwood is plentiful on our light Land, inclining to a rich Soil. It flowers the first in the Woods; its white Blossom making the Forest very beautiful. It has a fine Grain, and serves for several Uses within doors, but is not durable. The Bark of this Root infused, is held an infallible Remedy against the Worms."

Among the animals of Carolina, Lawson included some that have been extinct within the State for many years, such as the buffalo, or bison; elk, and wolf. Some of the animals listed are perhaps the result of too many campfire tales told for Lawson's benefit, for he mentions "Panther, Catamount, Wild Cat, Tyger, and Lion." The bobcat of western North Carolina fits the description of the wild cat, but Lawson himself seemed doubtful of the others. In his account of the bat, he stated that . . . "The Indian Children are much addicted to eat Dirt, and so are some of the Christians. But roast a Bat on a Skewer, then pull the Skin off, and make the Child that eats Dirt eat the roasted Rearmouse (bat) and he will never eat Dirt again. This is held as an infallible Remedy."

Although Lawson was an able reporter, his background in natural history was somewhat lacking, as shown by his descriptions of the snakes and turtles, which he called insects. As with some of the larger animals, he was misled by the settlers with such stories as that of the "horn snake," which he credited with killing a locust tree by striking it with its tail. Lawson stated that he thought the venom so poisonous that he did not believe the Indians even tried to cure the wound. The pilot blacksnake was supposed to be able to steal milk from a pail, skimming only the cream. Correctly, Lawson labeled the blacksnake as being an excellent mouser, making his presence in a barn an asset. With somewhat less accuracy, he passed on the story of the ability of the common box turtle to kill rattlesnakes by grasping the snake with its mouth and then retracting its head into the shell. The group of animals that we know as insects were listed by him as a sub-class of the insects, and were called reptiles.

After his journey through the Piedmont, Lawson settled near Bath and there became acquainted with some of North Carolina's fish. Some of the fresh-water fish that he recorded were pike, trout, perch, white perch, carp, sucker, catfish, and grindle. Salt-water fish note include whales and porpoises, which of course are not fish, sharks, Spanish mackerel, drum, bluefish, bass, sheepshead, flounder, mullet, and many others. He commented that although sharks were eaten during hard times he could never manage to eat them, although a lover of fish.

Lawson returned to England for a visit in 1709. Upon his return to the colony in 1710, he lived with a settlement of Palatines until 1711, when he accompanied Baron DeGraffenreid on an expedition up the Neuse River, where they met a party of Tuscarora Indians. During the ten years since Lawson had first met the Indians, their patience with the white men had grown somewhat thin. The party was seized and carried to the Tuscarora village. DeGraffenreid somehow escaped, but Lawson, one of the best friends that the Indians had ever had, was killed.

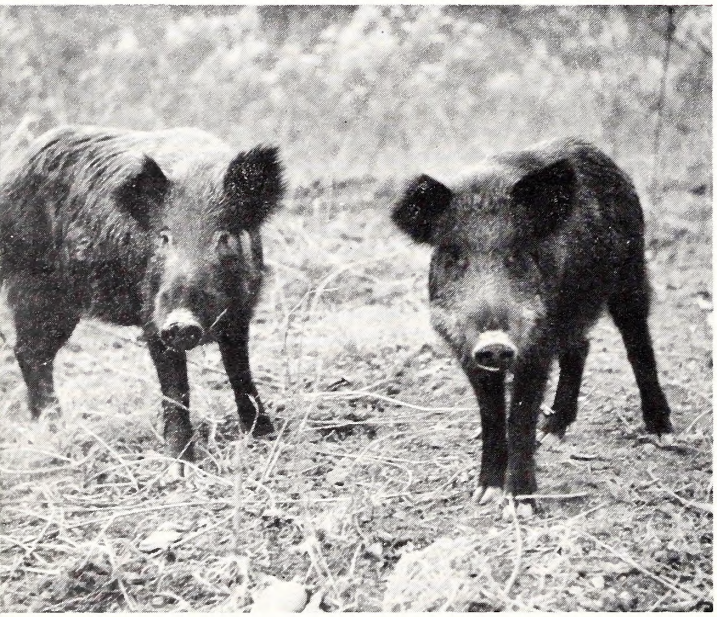
See *Lawson's History of North Carolina,* Edited by Frances Latham Harris. Richmond, 1952.

Lawson found the playful raccoon remarkable, noting that it readily accepted liquor. He was also told that the 'coon catches crabs by using his tail for bait.

Carolina Boar Hunt

Photo Feature by Rod Amundson

Blue Boar Lodge near Robbinsville was headquarters for a wild boar hunt on Santeetlah National Forest. The pictures on these pages are among the few ever taken of the strenuous and dangerous sport of boar hunting. The Russian wild boar has the keen senses of a deer, can outrun a bear, jump 20 or more feet, and scale a ten-foot perpendicular ledge. It is considered one of the most dangerous game animals.



Two of few Russian Wild Boar raised in captivity. When full grown, they will have tusks such as are shown above.

Boar hunting begins early in the morning chill. This party is ready to disperse to the shooting stands.

Before the hunt the dogs are alert — patient, but eager.

Peck Jordan, chief guide, loads his trusty Winchester.

Dogs stay on leash until they hit a hot trail. Guides look for boar sign.

Photo by Sebastian Summer

A hog wallow, Russian boar style. Other signs are tusk marks on saplings, rooted areas and trails.

Boar hunting is not all mountain climbing. Pate Cooper of Robbinsville sits in a "stand."

Boar at bay. To get this picture, a captive boar was released from a crate. He was no less vicious for being semi-domesticated.

Spot on chest of dog at left is a gash from a boar's tusk. Dogs are frequently injured by wild boar, which sometimes attack hunters.

Veteran guides and boar hunters, Peck Jordan (left) and Cole Carver examine a wild boar killed at less than ten paces. Had Jordan missed, the boar might have torn him to shreds.

Boar hunting is strenuous sport, and hunters are proud of their trophy. Holding this one's tail is Fred Bruckmann, owner and operator of Blue Boar Lodge, Robbinsville, N. C.

OIL BURNERS *and Bluebirds*

by Luther Partin
Photos by the Author

A few cents worth of hardware cloth and a little effort can save the lives of countless Bluebirds on Tar Heel tobacco farms.

The modern oil-burning tobacco curer is a wonderful thing for the farmer—but there is growing evidence that it is needlessly killing countless thousands of songbirds in North Carolina every year.

There is a type of oil burner on the market to suit every taste. All of them do a good job if used properly. From the standpoint of their effect on birds, oil burners can be divided into two groups: those having a flue or smokestack extending up through the roof; and those not having a smokestack.

This article will be concerned with the first group. Not because they're better or worse than the burners without smokestacks. But because the burners with smokestacks sticking up above the roof can destroy a large part of our songbird population. We say, "can destroy," because the situation can be controlled. Burners with smokestacks can be made as safe, from the bird's point of view, as any other type of burner.

It's a fact that songbirds get in the smokestacks. Whether they're looking for shelter, a nesting place, get in accidentally or because of curiosity, or whether they've just been watching Santa Claus, no one has yet been able to prove. Once inside, a bird can go but one way—down—since the pipe is too small for flying. The trip downward into the burner probably doesn't hurt a bird seriously, as he can use his wings enough to slow the fall. But he'd be better off if the fall killed him, unless starvation can be considered a more merciful death. And that's about all that can happen to a bird inside a closed burner, without food or water. His mummified remains will be found by a farmer cleaning out his burners in preparation for the coming curing season.

Without protective screens of hardware cloth over the smoke stacks, countless tobacco barns in North Carolina are death traps for thousands of birds.

Judging from the numerous letters received by the state museum authorities and the North Carolina Wildlife Resources Commission, the number of birds trapped in oil burners each year is worth considering. The death of these birds is regrettable, not only from the standpoint of their song and beauty, but from the standpoint of their insect-destroying activities, as well.

And now let's have a remedy. The simplest way to prevent birds from being trapped is to leave burners doors open after the curing season. If any birds get in the smokestacks they can fly out the burner door without harm. But some burners don't have doors; they have removable tops, instead. With these, the tops can be left off between curing seasons, or, better yet, the joint of pipe next to the burner can be removed. Birds coming down the pipe find themselves in a barn instead of trapped in a burner. Getting out of the barn is no problem, even to the largest songbird. Most barns have an opening in the gable for ventilation, and there is almost always an open space between the rafters and the plate. The ease with which birds can go in and out of tobacco barns is evidenced by the large numbers of birds that roost in tobacco barns during the winter.

A simple preventive measure when building a new barn, or installing burners in an old barn for the first time, is to fasten a small piece of hardware cloth around the bonnet on top of the smokestack. About ½ inch mesh is fine. Or, if you don't use bonnets, make a cap out of hardware cloth. Shape it like a big ice cream

cone, or a funnel, and fasten it over the top of the smokestack. Of course, these measures can be applied to old barns, but it's a lot more trouble than leaving a burner door open or removing a section of pipe in the barn.

To get some idea of the number of birds being trapped and to obtain information and illustrations for this article, the North Carolina Wildlife Resources Commission conducted a spot survey of tobacco barns. This writer, armed with flashlight, camera, tripod, flashbulbs, wrenches, screwdrivers, and pliers, examined several dozen tobacco barns in the Bright Leaf Belt. The findings were amazing, to put it mildly.

The first burner in the first barn checked had three dead sparrows. None of the other three burners in the barn had any. And so it went. The birds were usually concentrated in one or two burners in a barn. They obviously were not advocates of segregation, as bluebirds, sparrows, wrens, and starlings were all found sharing the same final resting-place.

The largest single find was a mixture of nine sparrows, starlings, and bluebirds in one burner. Another burner in the same barn had five birds. A third had two; a fourth burner was empty. A total of sixteen dead birds in one barn. Two other barns with smokestacks on that particular farm yielded three more dead birds; a total of nineteen on one farm. That was much higher than the average for the survey, of course. It wouldn't take long to materially decrease the songbird population at that rate. There were many barns and many farms that had no trapped birds at all. Significantly, most of these were cases where the doors to the oil burners had been left open.

One happy note of the survey was the discovery of an English sparrow still alive in a burner. Very weak, but evidently determined to face the end with typical ornithological bravery, he was standing courageously among several of his fallen comrades when the door was opened. He was kind enough to pose for several pictures, after preening his feathers a bit and apologizing for his bedraggled appearance. But the flashlight and exploding flashbulbs must have been too much for him. After a few pictures, he mustered his strength, pecked the photographer's hand, and flew out the open burner door, and up and out the gable ventilator to freedom.

Very few farmers could remember finding birds in their burners in previous years, in spite of the birds that were found during the survey. Yet, there is a possibility that many birds are trapped in burners, unknown to the farmer who cleans them out. In several instances where farmers had not discovered birds in the past, a small son or daughter remarked that they had gotten dead birds out of the burners while playing in the tobacco barns. In practically every case where children had taken birds out of the burners, the parents knew nothing about it. It would be difficult to estimate just how many trapped birds go unnoticed by adults in this manner.

Every farmer was quick to say he would leave his burners safe for birds at the end of this curing season. As one fox-hunting farmer put it, "Just one little bird killed that way is too many. They're worth a little effort to protect 'em just to have them around to look at and listen to, besides helping to keep the bugs and worms from eating up the crops." One farmer ventured the following, "The reason tobacco worms and boll weevils are getting worse every year is because there's not as many birds as there used to be. Maybe this is what's happening to 'em."

Two bluebirds, two starlings, and five sparrows taken from a single burner indicate the seriousness of the problem.

There are several hundred thousand tobacco barns in North Carolina. The survey average was about one bird for each barn checked. Figure it for yourself. If this even remotely resembles the true situation, a staggering number of birds are killed each year in this manner.

It takes but a little effort to make sure all the burner doors are left open after curing the last barn of tobacco. Or to remove the section of pipe next to the burner, if it has no door, or to bird-proof any new smokestacks you install. Do it this year. You can save many birds that will thrill you with their music and flashing colors, and, if the farmer was right, you'll be cutting down on the amount of insect dust and spray you'll have to buy in the future.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Walleyes Stocked in Major Reservoirs

Walleye pike taken from reservoirs where they had already been successfully established, have been stocked in all of the Piedmont reservoirs and in most of the TVA lakes in the western part of the state. The adult fish were mostly of spawning age, and the Wildlife Resources Commission hopes that a great deal of sport fishing will be added by the introduction of these fish. Newly stocked reservoirs will not be closed to walleye fishing. Sportsmen are put on their honor to return any walleyes caught until successful spawning has been completed.

* * * *

Commission Recommends Water Levels for Rockfish

In a letter to the U. S. Army Corps of Engineers, the Wildlife Resources Commission requested water levels in the Roanoke River at the Weldon Bridge to match those in effect last spring. The request calls for 25-foot level prior to the spawning season and 13-19 foot minimum-maximum during the spawning season. These levels were in effect last year, and the spawning season was considered to be successful. Conservationists and anglers hope that the Corps will approve these levels again next spring despite a heavier demand for power from Kerr Dam generators.

* * * *

January 15 Deadline for Entering Wildlife Essay Contest

Tar Heel school teachers have until midnight, January 15, to register their pupils for the annual wildlife essay contest sponsored jointly this year by the N. C. Wildlife Federation, the N. C. Academy of Science, and the Wildlife Resources Commission. A letter from teachers of the 7th-12th grades addressed to: Essay Headquarters, Box 1341, Raleigh, stating the number of pupils desiring to compete, will serve as official registration. The contest ends February 28 and essays must be in the hands of District Academy of Science Fair headquarters for judging by March 1.

* * * *

Bicolor Lespedeza Ready for Free Distribution

The Wildlife Resources Commission is in the process of delivering 5,000,000 bicolor lespedeza seedlings on a first come, first served basis to Tar Heel farmers, sportsmen, and interested organizations. Applications for the seedlings are available from District Biologists and the Commission's Raleigh Office.

SCIENCE FAIRS

Science Fairs and Essay Contests are to hold an important place in High School Science in 1955

by Mazel Bowles Lyke
Dept. of Biology, Albemarle High School

Feeling the impact of the need to stimulate high school students to go into the science fields in teaching, industry and research, the North Carolina Academy of Science with the cooperation of the Oak Ridge Institute of Nuclear Studies has started one of the most vital programs to hit the junior and senior high schools of North Carolina in recent years.

This program was arranged by the University of North Carolina and launched at a Science Fair Work Conference at Chapel Hill, N. C., October 15-16, 1954. Over 160 junior and senior high school science teachers and affiliates of the above groups received the impetus of the science fair and essay method to stimulate students in classrooms to choose the role of science for their future.

One of the most disturbing trends of our time is the contrast between the increasing need for scientists and the decreasing number of young people who are entering into scientific careers. By projecting this contrast into the future, it is clear that the direction must be toward additional scientists to fill that demand if we are to maintain our security and national well-being.

The place to begin, if effective action is to take place, is in the high school and lower grades. In the high school area, significant developments have been in the introduction of science fairs and essay contests. Neither is a substitute for sound teaching, but either could be the help or the powerful stimulus to students to embark on scientific careers.

The science fair also has the special additional advantage of increasing general public understanding and appreciation of the role of science in life.

At the conclusion of the conference, the public was in possession of these facts:

1. There will be six district high school science fairs and essay contests that will fit the block pattern of the North Carolina Educational Association's administrative units. Each district will sponsor fairs as follows:
   a) Northeastern—East Carolina College, Greenville, April 2, Dr. J. O. Derrick, director.
   b) North Central—N. C. State College, Raleigh, April 2, Dr. Alfred F. Borg, director.
   c) Southeastern—Flora MacDonald College, Red Springs, April 16, Dr. Amy LeVesconte, director.
   d) Northwestern—Woman's College, U. N. C., Greensboro, April 2, Professor Robert J. Laffin, director.
   e) South Piedmont—Catawba College, Salisbury, April 16, Professor Hansel L. Hughes, director.
   f) Western—Western Carolina College, Cullowhee, April 16, Dr. J. G. Eller, director.

2. The contest categories are:
   a) Exhibits:
      (1) Biological Science
      (2) Physical Science
   b) Essays:
      (1) Ornithology: "The Migrations of Birds."
      (2) Wildlife: "The Economic Value of Wildlife in My Community."
      (3) Forestry: "Living with Wood—Contributions of Trees and Forest Product to Everyday Living."

3. Awards: Certificates of merit will be given to all participants of the District Fairs. In addition five winners from each category and two outstanding essays from each group will be chosen to compete in a State Science Fair to be held at Duke University April 22-23, 1955. At the conclusion of the state fair, the winners of each essay subject will be announced and two outstanding student exhibitors will be selected with their teachers for an all expense trip to the National Science Fair at Cleveland, Ohio. Specific additional awards will be made as follows:
   a) District: Wildlife essay—10 award to best essay.
   b) State: 1) Biological Science Exhibits—$25 first prize, $15 second prize.
      2) Physical Science Exhibits—$50 first prize, $30 second prize and $20 third prize.
      3) Forestry essay contest—$20 first prize, $10 second prize, $5 third prize.
      4) Ornithology essay contest—Prizes to be announced later.
      5) Wildlife essay contest—$100 first prize, $75 second prize and $50 third prize.

Photo by Margaret Fisler

Science fairs are enjoyed by spectators as well as the students who construct the exhibits. Six district science fairs will be held in 1955.

Classroom teachers are interested in the merits of the judging for the District and State Fairs. Just exactly how will the exhibits be judged?—was a question at the conference. It will be an important question for

teachers and their students through the next few months. Teachers often recognize potential science talent in their own classrooms. What is basically good or what is an outstanding idea for the portrayal of scientific principles, often gets overlooked in competition because of lack of knowledge on the part of teacher and student for showmanship. So the following points will be the basis for score card judging on the entries:

Creative ability—30 points. Does the exhibit show originality of thinking and of illustrating a scientific principle?

Scientific thought—30 points. Does the exhibit show evidence of well-organized work, an extensive searching for facts, or the use of controlled experimentation and a careful analysis of data?

Thoroughness—10 points. Does the exhibit give a complete story of the scientific principle or scientific process involved?

Skill—10 points. Does the exhibit show good workmanship in the handling of materials? Was the exhibit made from raw materials or were the materials purchased?

Clarity—10 points. Does the exhibit give a picture that the average person can understand? Is the exhibit neatly described by guide marks, labels and drawings?

Dramatic Value—10 points. How does the overall attractiveness of the exhibit compare with others in the same category? Does it "catch your eye"?

When exhibits are presented for competition, these facts must be adhered to:

1. Science work done by junior and senior high school students in any school in the district may be exhibited.
2. A contestant may enter only one exhibit. Teachers and sponsors may advise students but all work must be done by the individual.
3. Exhibits must be confined to a space 3 feet deep (front to back) by 4 feet wide (side to side) or smaller. Electric power will be supplied. (110 volts a.c.). Neither gas nor running water can be guaranteed.
4. Dangerous chemicals, open flames, explosives, poisonous reptiles, and starvation experiments on animals must not be exhibited. The local chairman may refuse permission to exhibit for reasons of safety, sanitation, or the best interest of the fair.
5. Applications to exhibit at the fair must be made by submitting an official entry blank to the District Director on or before March 15, 1955. These blanks may be secured from the district director or from the Director for the Junior Academy, Dr. Hollis J. Rogers, Woman's College, U. N. C., Greensboro.
6. Exhibitors will arrive at the college sponsoring the fair by 9:30 a.m. on the day of the fair. Exhibits will be ready for the judging by 11 a.m. The exhibits will be open to the public from 1 to 4 p.m. All exhibits must be removed before 5 p.m.

That this Science Fair program is acclaimed as important is manifest by the following organizations that are endorsing the program with their sponsorship: N. C. Department of Instruction; N. C. Section, American Chemical Society; N. C. Forestry Association; Carolina Biological Supply Company; Cardinal Products, Inc.; Duke University; N. C. Wildlife Resources Commission; Wildlife Federation of North Carolina.

The Oak Ridge Institute of Nuclear Studies is giving specific help to teachers in their plans. The address is: Box 117, Oak Ridge, Tennessee. Write directly to Mr. Dewey Large and printed helps will be furnished free to all high school teachers who request such help in planning and preparing their exhibits.

Supply and demand, stimulus and reaction, the balance of nature—these have been partners in our heritage in science and industry. These should find a working culminus in the North Carolina Science Fair program of 1955.

PROTECTOR OF THE MONTH

Amos Bordeaux

Mr. Amos Bordeaux was born at Ingold in Sampson County in 1913 and graduated from Ingold High School in 1931. He is now married and has four sons.

A former deputy, Mr. Bordeaux was employed as a full time Wildlife Protector for Wayne County in October, 1948. He was subsequently transferred to Sampson County to replace the late W. I. Wright, who was killed by a group of Sunday squirrel hunters.

Mr. Bordeaux has attended two law enforcement training schools at the Institute of Government, a department of the University of North Carolina. He advocates public education, particularly of the younger generation, as the means leading to the eventual success

WILDLIFE ESSAY CONTEST

Pupils in the 7th to 12th grades of North Carolina's schools have until January 15 to be registered by their teachers for the 1955 Wildlife Essay Contest, as announced in the November issue of WILDLIFE. Competing for a number of cash prizes, the students will write essays on the subject: "The Economic Value of Wildlife in My Community." Sponsored jointly by the N. C. Wildlife Federation, the N. C. Academy of Sciences, and the Wildlife Resources Commission, the judging will be conducted at the six regional science fairs of the Academy of Sciences. Three of the fairs will be held on April 2, and the remainder will be held on April 16.

of any wildlife conservation program. But, he opines, "it's a tough job to teach old dogs new tricks," and has consequently found it necessary to prosecute several hundred violators during the six years he has been with the Wildlife Resources Commission.

ENFORCEMENT RECORD FOR OCTOBER

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of October, 1954:

Persons checked	**20,997**
Prosecutions	**391**
Convictions	**367**
Fines collected	**$5,596.00**

All fines collected are required to be paid into the school funds of the counties in which the convictions were obtained. Fines were not collected, being either suspended or not levied, in 38.42% of the total number of convictions.

It's the Law!

Question: What is the maximum penalty which a court may impose upon conviction of a defendent charged with attempting to take a deer at night with the aid of an artificial light?

Answer: There is no maximum penalty specified by law for this offense. The law specifies a minimum penalty of a $250 fine or 90 days imprisonment and provides that revocation of any hunting license held by the defendant is mandatory. In addition, the court may order confiscated and sold any gun, light, vehicle, or other equipment used in the violation.

Where a statute defining a misdemeanor provides no maximum punishment for its violation, such is within the discretion of the court, subject to the constitutional inhibition against cruel and unusual punishment. Our Supreme Court has indicated that a two-year prison sentence is not a cruel or unusual punishment for a misdemeanor.

Students must be registered by their teachers, with registration postmarked not later than midnight, January 15. Teachers must state the number of students who wish to enter the contest.

The essays, which are not to exceed 1,000 words in length, are to be in the hands of the judges postmarked not later than March 1. Each student may submit one essay, which must be legibly written, or if typed, must be double-spaced. Prizes include $100.00 as first prize, $75.00 as second prize, and $50.00 as third prize. The best essay from each of the six Academy of Science fairs will receive a prize of $10.00.

from page 5

populations. A recently completed quail study in Kentucky bears this out. This study found very little fox predation on quail, and total predation was not excessive at any time. A recent similar study in Texas showed that predators had little effect on quail populations; quail populations were determined by weather and habitat conditions. An eight-year study in Maryland showed that predators had no effect on the carrying capacity of quail lands.

With regard to rabbits, the fact that predators are seldom a controlling factor is demonstrated on one of our North Carolina wildlife management areas which carries heavy populations of both foxes and rabbits. Even though the "balance of nature" theory has perhaps at times been oversold, some instances have been recorded where over-control of predators resulted in the destruction of game habitat by the non-game species which the predators normally kept under control. Large scale attempts at predator control, through such means as bounties, have been very costly and have failed to produce the desired results. Even conceding the fact that there may be localized instances where, as a result of some upset such as severe winter weather (which may cause game to expose themselves for food), predators may make serious inroads on game populations, the only conclusion that can be drawn is that predator control as a game management tool generally is not practical or economically feasible. Control of predators over and beyond that normally exercised by hunters and farmers should be used only in specialized situations where it can be carefully controlled.

What about the curtailment of hunting? There is no evidence that North Carolina quail and rabbit populations are being overshot with our present hunting seasons. In fact, research has shown that hunting rarely has any serious effect on rabbit populations, and only in rare instances are quail hunted too heavily. A recent study in Kentucky showed that refuges closed to all hunting were not beneficial in building up quail populations. Quail production varied with the quality of the habitat, and hunting had practically no effect on the following year's harvest. Curtailment of hunting is not the answer to our problem. What, then, is the answer?

(For the answer see Part II in February issue.)

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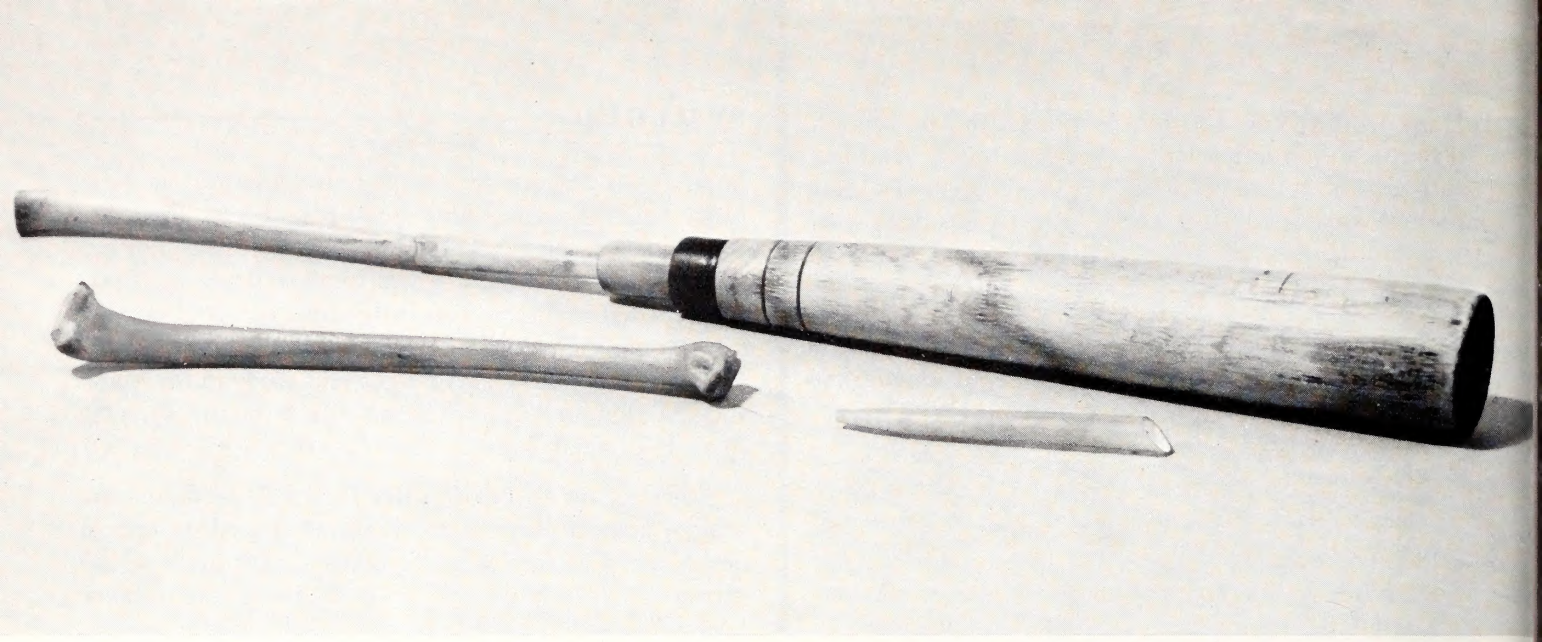


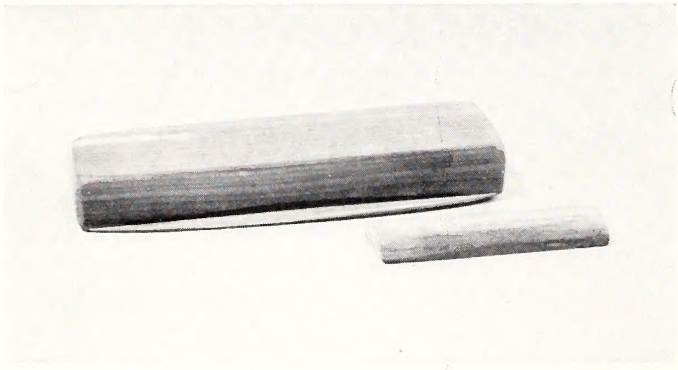
The trumpet turkey call is made from the hollow wing bone of a wild turkey, inserted in the tip of a wing feather which is in turn inserted in a hollow wooden horn. The hunter sucks on the bone, obtaining an excellent imitation even in wet weather. Shown beneath the call is an unfinished bone and feather tip.

TURKEY CALLS

by Jim Lee
Photos by the Author

Victim of a changing habitat and ever-increasing hunting pressure, the wild turkey has become one of the most prized game birds. The challenge of hunting the turkey, and the value of the bird when killed, has prompted some hunters to match their wits with the wily bird by imitating his call in order to bring him within range of their guns.

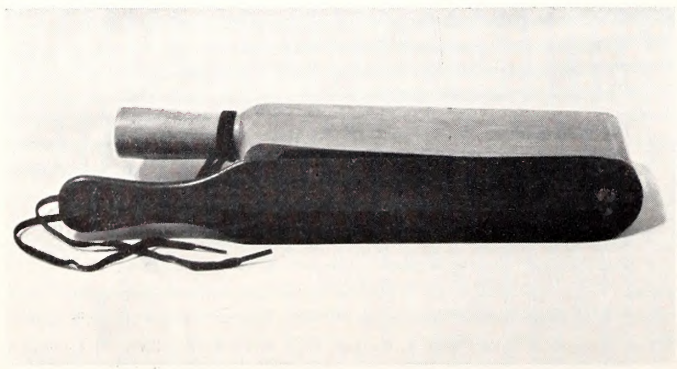
This hollow cedar box emits a turkey-like shriek when scraped across a small block of chalked cedar. This call loses its tone in damp weather.



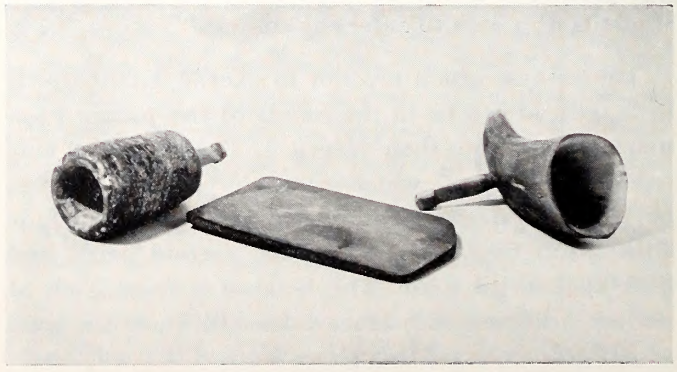
Although some people are said to be able to call a turkey with their mouth alone, most experienced hunters rely upon one or more of the four common types of mechanical and breath-operated calls. The confirmed hunter, one of the most dedicated souls to be found, spends much of the closed season making and testing his calls. All of the calls illustrated here were homemade, and most have at least one gobbler to their credit.

As important as the ability to imitate the bird is the patience to wait for the wary gobbler to show himself. Calls are used early in the morning when the flock is reassembling after the night's roost, or when a flock is scattered by the hunter or his dog. Hiding in a blind, the hunter attracts the turkey, often keeping up a conversation with him for an hour or more, until he comes within range. Happy is the hunter who hears in response to his calling the familiar "keouck, keouck, keouck" of the wild turkey.

The Gibson call consists of a box with handle and a loosely attached scraper. Shoestrings prevent accidental noises while the box is being carried.



An acceptable squawk is produced when a hollowed horn or corncob with a wooden scraper is drawn across the piece of slate. This is another dry-weather call.



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

The end of January marks the close of all hunting seasons except for raccoon and opossums. All in all the 1954-1955 hunting season could be considered quite successful, although there were the usual scattered gripes on the part of hunters who found game hard to locate. An outstanding feature of the big game season was the removal of the lottery system of granting hunting privileges on all but the bear and boar hunts in the extreme western part of the state. Because of an increase in the number of areas where deer hunting was permitted, hunters were treated to management area deer hunting on a first come, first served basis.

A farmer dropped by the Wildlife Commission's office in mid-November to pick up some "Hunting By Permission Only" signs. In past years he had posted his land solid, i.e., no hunting no fishing—nothing. But nevertheless someone got into one of his farms and shot the quail down to the last bird. It is amazing, in this enlightened age, to find that we still have the type of character who will exterminate a whole covey, leaving nothing whatever to produce a new crop of birds for the following year. There are plenty of good sports in this state who would like very much to spend a few minutes alone with this type of hunter.

The current hunting season has been marked by too many hunting accidents. There were several fatalities and many more injuries. All this useless pain and grief because people forgot that every gun should be given the respect that is due a loaded gun.

Coming up March 20-26 is annual National Wildlife Week, sponsored by the National Wildlife Federation. The theme this year is on the subject of saving our wetlands. Doesn't sound important until you consider that when the white man first started poking his nose about the country we had 120 million acres of marshes. Now we have less than 30 million, and marsh lands are the places where most of our waterfowl and furbearers hang around. You may stand by to get your ears drummed on the subject by TV, radio, and the Press.

Our thanks go to all the nice people who contributed to Crackshots & Backlashes.

"Dear Sir:

"Due to a forest fire recently on my farm which we have reasons to believe was set by squirrel hunters without permission to hunt on my premises, I wish to post my land and to do so I'm writing you for information as to securing the proper posters and how much it will cost me if anything.

"Many hunters are very careless and the bird or quail season will soon be on, and living here at the foot of the mountains we are at times overrun with hunters and many do not ask our permission.

"Thanking you for the above information soon.

Yours very truly,
John L. McElrath"

We mentioned posters such as this farther up on the page. Mr. McElrath is justifiably irate regarding trespass and the starting of fires by hunters. It is pleasing to report, however, that in our good state hunters and campers combined start less than five percent of all forest fires. Most hunters we have seen in the woods break their used matches in two to be sure they are out, and are careful about being certain butts are completely extinguished.

"Dear Sir:

"While I have enjoyed reading "Wildlife in North Carolina" for the past several years, I was tempted not to renew my subscription when you opened the squirrel law here in Catawba County on October 1, which was a most unrealistic thing to do. In the first place it is entirely too early for the law to come in in this part of the State, and in the second place we were suffering from the worst drought in the history of our country.

"Of the two hundred acres of land I own, over fifty are in woods, and most of it offers excellent squirrel hunting. You can imagine a land owner's concern when his woods are as dry as a tinder box with the hunting pressure as heavy as it is here in Catawba County. If you wish to conserve game and habitat, and provide better hunting for the sportsman, then you would do well to take a

Cartoon by Lee

more realistic attitude toward the farmer and land owner who provide it.

"Farmers who are gathering in their fall crops and preparing to sow their small grain do not have the time to hunt squirrels in October. I know of several instances where squirrels were killed and thrown away because of wolves. If the squirrel law was opened on November 1, instead of October 1, most of this waste in wildlife could be avoided, and the farmer, by this time, would have most of his fall work done and would have a little time to get out and get his part of the game.

Yours very truly,

Robert E. Little"

Soon after this was written Hurricane Hazel pulled the only kind act of the big blow. She gave most of the state a good soaking and relieved the fire hazard conditions. The Wildlife Commission and other agencies kept close watch on the fire hazard situation, and hunters came mighty close to lose part of their season when Hazel came along and blew the fires out, so to speak.

"Dear Sir:

"Please renew my subscription to WILDIFE IN NORTH CAROLINA for two more years. I have enclosed $1.00 for this purpose and I wish to say that I believe there is no better value to be had in the way of a genuinely usable and educational magazine.

"I work with a group of fellows who are very much in the hunting and fishing end of outdoor recreation, and as a result of this there are frequent discourses on the lesser known phenomenon of our natural resources.

"I would greatly appreciate it if you would be kind enough to clear up a few points for me.

"Please outline the antler-losing which occurs in the case of the whitetail deer, also, do any or all other types of deer lose their antlers each year or at what interval do they lose them.

"What happens to the antlers which are dropped in the woods? Is there a regulation governing the caliber of rifle which may be used to hunt deer in North Carolina: How about federal regulations on this?

"Some of my friends were on a hunt down near Beaufort recently and they saw several bucks (got one) but there were many does—approximately six or more to one buck, is this an unhealthly situation and if so, is it likely that there will be open season on does in this area in coming years?

"I think Duane Raver's detailed drawings are the best I have ever seen and although my art training is rather meager, I feel that I make a pretty critical critic, if you know what I mean.

"Your help in the above questions will be greatly appreciated and the only change I would like in our magazine would be a greatly increased circulation. I am sorry to say that most of my friends do not take the magazine, and many of them don't seem to be aware of it at all. I don't know what to do about this just thought it might be worth mentioning.

Yours for more and better everything,

R. S. Walton"

Mr. Walton's question would fill several books if the answers were recorded in full detail. Boiled down, the answers go like this:

Deer, elk, and similar animals grow a new set of antlers each year. The antlers reach prime mature hardness just before the mating season. In early spring or late winter they fall off. What becomes of them? Mice and other rodents consume them entirely. They are a good source of minerals.

As to rifles, Tar Heel law says, in part, "Game may be taken only with rifles and shotguns of not greater than 10-guage . . . No mention is made of rifle caliber. Federal rules prohibit use of rifles for taking migratory game birds, and don't mention caliber.

As to the possibility of a doe season, this is a warm subject. There is much aversion to killing does, but as a tool of game management it might be necessary in the future to kill does in order to prevent deer herds from destroying themselves by destroying their food supply.

We are not taking sides on the question at this stage of the game.

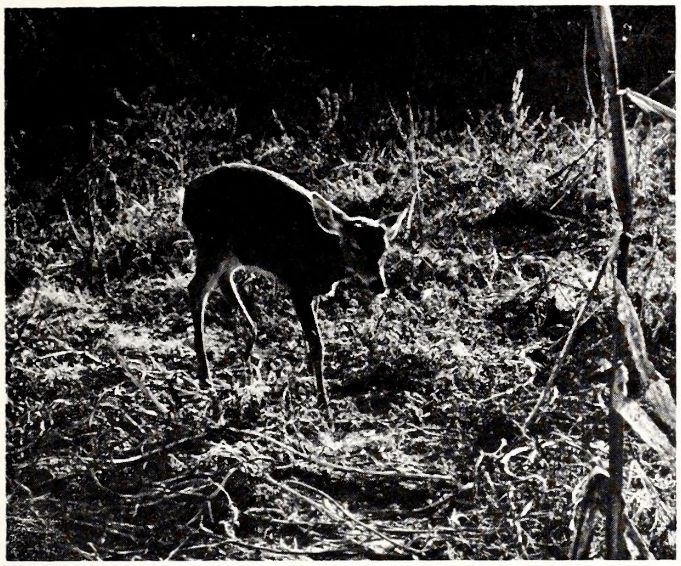
"Dear Sir:

"You should've been up to join the confusion of the opening deer hunts. We had quite a gang of people at every checking station but the wardens did a good job of handling them.

"I dropped around to the Mills River checking station on Pisgah Preserve Sunday afternoon and lo and behold, what should come strolling up but a spike buck. So

I hauled out my camera real quick and shot the picture enclosed. That's how tame they are. Thought you might like to use or just see the picture so I'm sending it along.

Bob Terrell"



"Dear Sir:

"I thought you may like to use the inclosed manuscript of poems in the next issue of the magazine under any caption you wish unless mine is suitable and for this there is no charge, however, in event of your not making use of it, kindly return same to me.

Sincerely yours,

R. I'On Lowndes"

Impressions of an Old Hunter

Wild turkeys have no sense of smell
But with keen eyes and ears can tell
When the hunter, with his gun is near;
In a flash they rise until they clear
The tops of all the tallest trees,
And sail far off with perfect ease.

Jack snipe feed in marshy lands,
Where their color blends, you understand;
On them it's hard to get a sight;
They zigzag low, in rapid flight;
But if you miss, you can save your face,
They'll come right back to the self same place.

The Woodcock is an easy kill,
With light brown vest and long black bill
And whistles when he flies straight up;
He surely must believe in luck.

The swiftest bird of all we know
Is the blue wing teal, as this will show;
Its wonderful speed has oft been reckoned
At more than a hundred yards a second;
To make contact with this speed
Allow about a ten foot lead;
Put your gun-sight right in line
And pull the trigger at the precise, right time;
Then watch and see; if your aim was sure,
It will fall in a hundred yards or more.

My pick of game birds is the grouse;
He drums on a log, to attract a spouse,
Which sounds like a distant motor car
But hard to tell how near or far.
When the season opens and you try your skill
You will find him the hardest bird to kill;
It takes a quick shot to bring him down
For he goes like a bullet, when he leaves the ground,
And he always manages to make a screen,
By putting a big tree in between,
To make it worse, it seems so strange
How he can tell when he's out of range.
This is no yarn, I'm telling you;
For all grouse hunters know it's true.
The only way to turn the trick,
Is to practice shooting from your hip;
It takes some time to perfect this art
But you'll never learn unless you start.

"Wonder Age"

The following statement by Lester Bagley, Wyoming State Game and Fish Commissioner, is reprinted from a recent issue of *WYOMING WILD LIFE.*

"We live in an age of wonder-drugs, anti-biotics and synthetic fabrics. We move along at high speeds with automatic transmissions, super fuels and jet engines. We watch television and cinemascope and listen to trans-oceanic broadcasts. We anxiously await fulfillment of promise of nuclear fission aircraft engines and of cures for TB and cancer.

"One leading manufacturer boasts over the air waves that his most important product is progress through scientific research. We all appreciate the

"Just checking haunting licenses, Bud."

benefits we derive from continuing research in industry. Likewise, we're ready to accept an AMA finding regarding polio or a report from an engineering institute on some new discovery.

"We fish with nylon leaders, with fiberglass rods, with reels made of new alloys. Scientific research has given us new powder for our cartridges and new combinations of metals for our bullets. New metals insure rifle barrels with life-long accuracy. We live in a wonderful age of scientific advancement and we take full advantage of it in the fields of medicine and industry.

"Isn't it odd then, that the modern-day sportsman sometimes expects game management to ride in a buggy and yet keep up with present heavy demands on fish and game? Propagation of game animals by strict law enforcement alone or propagation of fish by planting alone are as dated as the mustard plaster and the kerosene lamp. Yet some persons insist that these two practices are sufficient. They regard scientific research in Wildlife matters as a stupid innovation.

"If the public wishes to maintain its wildlife resources, it must be as ready to give serious thought to findings of a wildlife biologist as it is to accept the products of the industrial worker."

Dog Warden Experience

A recent newspaper story from Roxboro gave the results of the dog warden program in *Person* County in its first year of operation. The dog population in the county has been decreased by over two thousand dogs, that being the number of stray, ownerless animals destroyed by the dog warden. Over three thousand dogs have been vaccinated against rabies, and almost one thousand dogs have been added to the tax books. In addition, not one case of rabies has been reported in the county during the past year, whereas previously from two to six cases were reported each year. A dog pound was built by the county at an approximate cost of $2,000, with captured dogs confined there for several days during which time their owners were permitted to reclaim them by listing them for taxes and having them vaccinated in addition to paying for board costs.

Following successful dog warden programs in other counties, *Iredell, New Hanover,* and *Rutherford* counties have recently appointed dog wardens under the 1951 dog warden law (G. S. 67-30 to 67-36). In addition, *Guilford County, Greensboro,* and *High Point* are discussing the possibility of constructing a joint dog pound to take care of the dogs of all three governmental units.—*POPULAR GOVERNMENT*

Cartoon by Lee

ALWAYS BE SURE THAT THE BARREL AND ACTION ARE FREE OF OBSTRUCTIONS.

Rattlesnakes, contrary to belief, do not seek to avenge the death of a mate. They are attracted to the death scene by scent.

CHAIN PICKEREL

from page 7

it pounces upon any unsuspecting fish which may happen to swim by. In fishing for them, the fisherman will do well to remember this characteristic. Spoons or spinners with streamer flies most often get results when cast or trolled along the edges of the weed beds.

Of course, there are days when the pickerel will permit the lure to pass within inches of its nose and pay absolutely no attention to it. Again it will strike at nearly any offering. They seem to be most cooperative in the spring and fall months, but are much more difficult to catch in the middle of summer when the natural food supply of the year is at its peak of abundance.

Wire leaders usually are recommended because the pickerel is equipped with such a formidable array of large sharp teeth. Actually, they seldom are lost on nylon leaders, and lures are more effective without the wire. The fisherman does well to remember the teeth, however, and to keep his fingers out of the fish's mouth when handling it. It should always be picked up by the gills instead of the jaw, or, better yet, taken in a landing net.

This fish has one other characteristic which many fishermen have to learn the hard way. After being hooked, and having made its first run, it frequently will come in to the boat or bank with very little resistance. Just as you are about to reach for it, a sudden burst of speed and power can break your rod tip as the fish goes under the boat or can snap a line as it dives into its favorite weed bed.

And one final hint concerns the preparation of your chain pickerel for the table. Perhaps you have heard, or have found from experience, that sometimes they have a "weedy" taste. This flavor comes from the mucus secreted by the skin. Next time don't scale them—skin them!

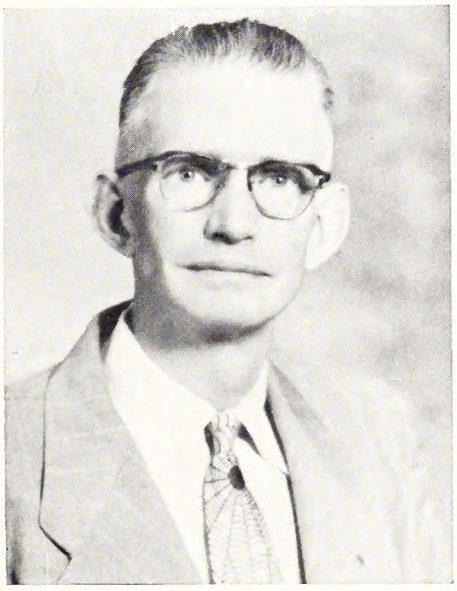
SUBSCRIPTION CONTEST WINNERS

A. Eugene Jones, left, Wildlife Protector in Chatham County won an Airex Beachcomber salt-water spinning reel and an Airex salt-water spinning rod, placing first with 1,753 points.

J. D. McLean, lower left, Wildlife Protector in Gaston County won second place with 1,593 points, and was awarded a Pflueger Supreme fresh-water casting reel.

Luther Skaggs, below center, Superintendent of the Marion Fish Hatchery won a CAP fresh-water spinning reel as third place winner with 551 points.

Robert C. Johnston, below right, Wildlife Protector in Robeson County, won a Horrocks Ibbotson Moose Lake glass casting rod and Green Dragon casting reel by winning fourth place with 390 points.



During a subscription campaign conducted recently by the employees of the Wildlife Resources Commission a total of more than 12,000 subscriptions to WILDLIFE IN NORTH CAROLINA were sold. These, added to the normal influx of subscriptions through the mail and from other sources has raised WILDLIFE'S total circulation above 50,000 copies per month. In addition to the contest winners shown above the following people sold 100 subscriptions or more:

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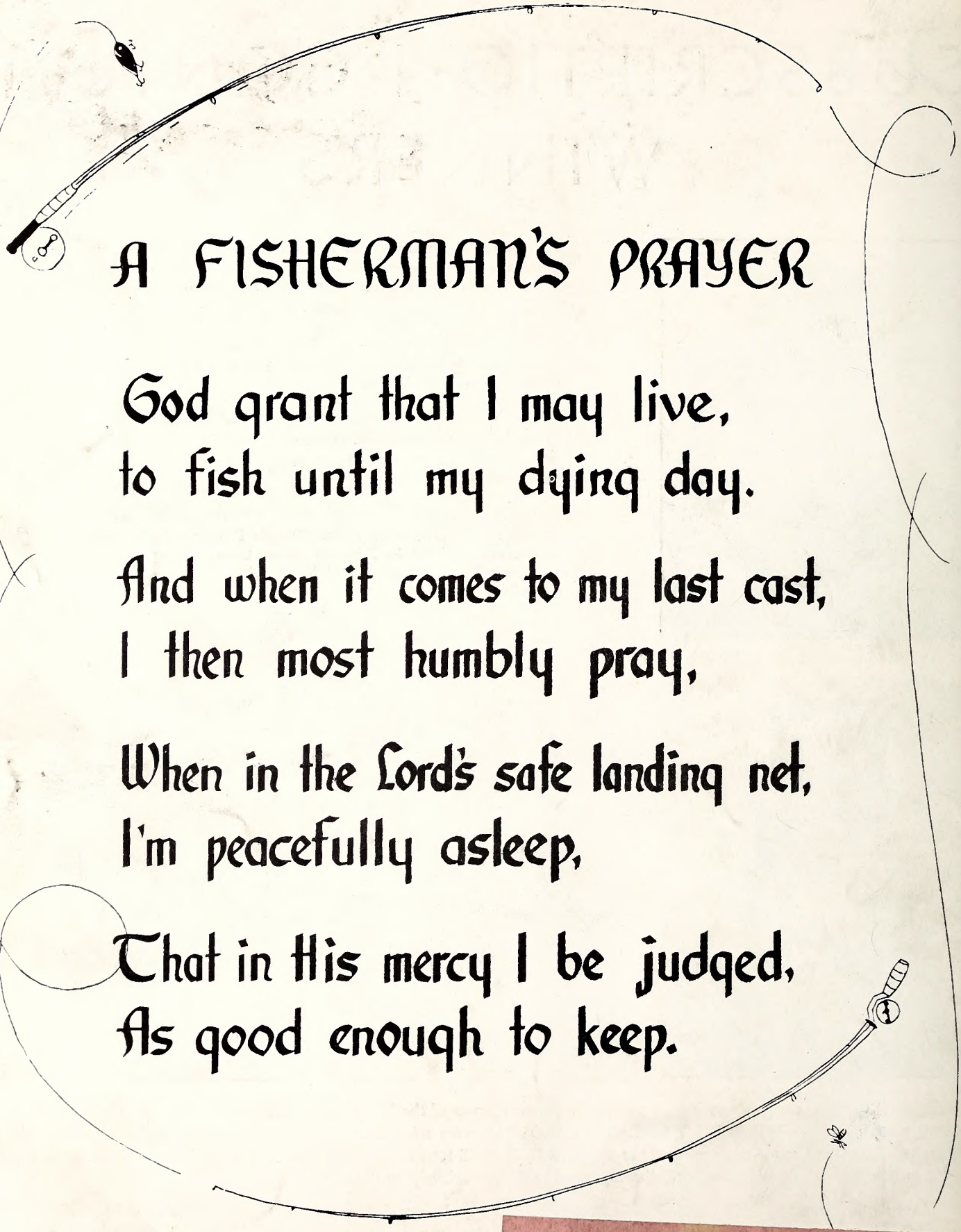
In addition to the above thirty-seven people reached or surpassed the quota of fifty subscriptions.



A FISHERMAN'S PRAYER

God grant that I may live,
to fish until my dying day.

And when it comes to my last cast,
I then most humbly pray,

When in the Lord's safe landing net,
I'm peacefully asleep,

That in His mercy I be judged,
As good enough to keep.

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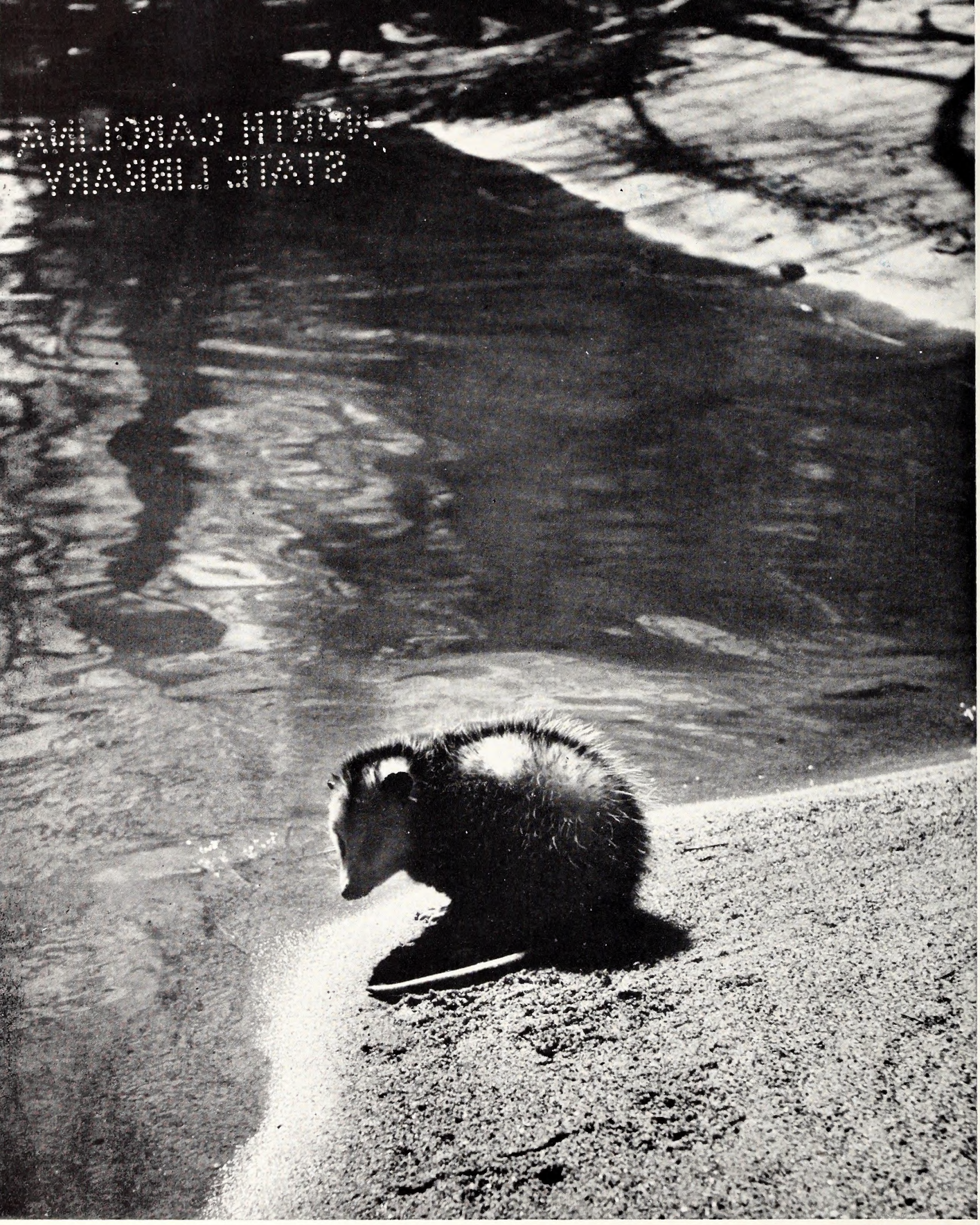

Photo by Jack Dermid

February Moonlight

The 'possum is a lucky animal. It can adapt itself surprisingly well to habitat changes and survive—even increase in numbers. But quail and other farm game species are not as fortunate. Clean farming practices of modern agriculture are an even greater menace to their welfare than increasing hunting pressure. See page 4 for an important article on improving Tar Heel hunting.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

LUTHER H. HODGES
Governor

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COVER

The great horned owl has been labled the "feathered tiger of the air." It is a powerful and efficient predator, but its take of game species will be small where adequate protective cover is present. Color photograph by Jack Dermid.

☆ ☆ ☆

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Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Jim Lee ..... *Editorial Assistant*
Anne Taylor ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all materials published.

☆ ☆ ☆

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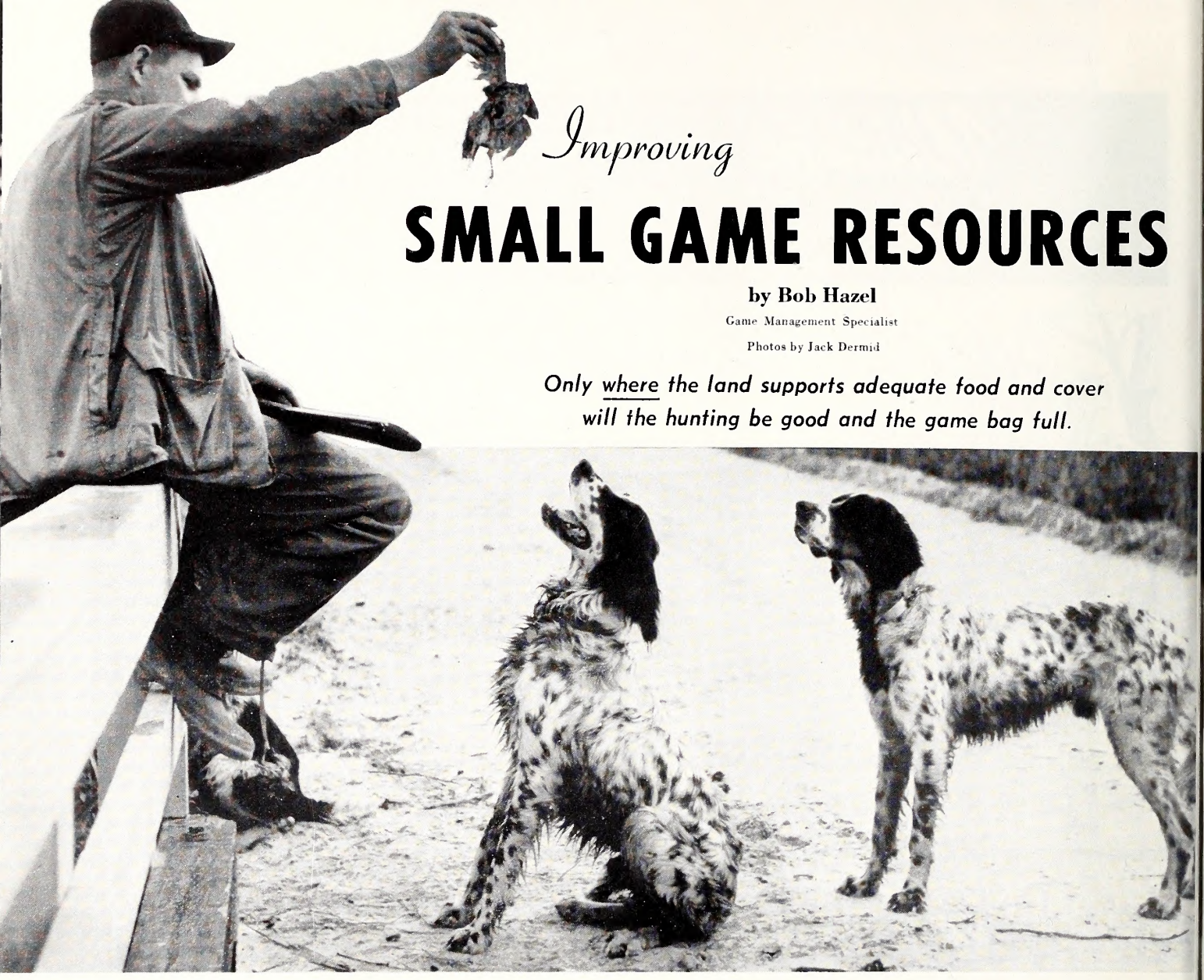

Improving

SMALL GAME RESOURCES

by Bob Hazel

Game Management Specialist

Photos by Jack Dermid

Only where the land supports adequate food and cover will the hunting be good and the game bag full.

PART II

In Part I of this article, which appeared in last month's *Wildlife*, the small game situation, along with some of the popular theories and reasons for this situation, was discussed. We left the reader guessing as to the best solution to the problem of providing better small game hunting. Here is the author's answer to the problem.

The answer to North Carolina's small game problem is clear. Game population levels depend directly on the amount and quality of habitat available, except for local fluctuations due toweather or disease. The amount of food and cover present is almost always the factor that determines the abundance or scarcity of quail and rabbits. This has been demonstrated time and again right here in North Carolina. The problem then becomes one of how best to improve the habitat for game. The ease or difficulty of accomplishing this depends on the local situation, and requires a thorough knowledge of game animals, their habits, and their particular requirements. Habitat development can take two forms: (1) development of natural food and cover, using native vegetation; and, (2) planting food and cover. Many times both can be combined for best results. On a great many North Carolina farms, adequate cover exists, but ample food supplies are lacking. On other farms, particularly in the livestock farming sections, both food and cover must be provided.

In 1948 the Wildlife Resources Commission recognized the problem and set up an extensive practical program, using trained personnel and management techniques which would fit into the varied farm program across the State. The program centers around two main activities: (1) furnishing trained personnel to give technical advice to landowners and sportsmen concerning game management problems; and, (2) furnishing free planting materials to landowners to provide game food and cover. In order to implement the program, a trained wildlife biologist was assigned to each wildlife district and a nursery was set up for the production of the planting materials. The aid of the Soil Conservation Service and the State Extension Service was enlisted in order to reach as many farms as possible. Working agreements were completed with most of the Soil Conservation Districts in the State for the purpose of furthering wildlife management practices. The prac-

tices themselves were designed to fit into the farmers' program, using land not suited for rearing crops, and in addition aiding in soil and water conservation.

The results? During the six-year period 1948-1954 a total of 21,915,025 bicolor lespedeza seedlings, 684,150 shrub lespedeza seedlings of varieties other than bicolor, 5,226,179 multiflora rose seedlings, 1046 pounds of bicolor seeds, and 31,288 pounds of sericea lespedeza seeds have been distributed to landowners in the hundred counties of the State. These materials were received by 12,833 individual landowners. In addition, each year the Commission has distributed thousands of pounds of a mixture of annual seeds to be planted for quail food patches. Also, many landowners were advised concerning game management practices which did not involve planting but rather the use of native vegetation. Follow-up studies each year have shown that 88% of the landowners receiving planting material used them,

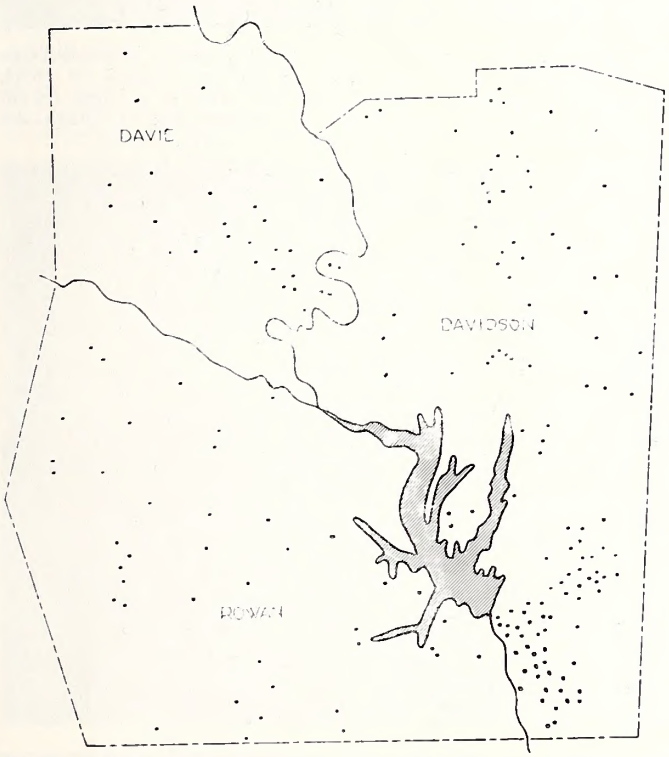

Figure 1. Each dot shows the location of habitat improvements in the counties represented. Where the dots are grouped together in a concentration of effort, a greater return in wildlife can be expected.

and that 70% of these plantings were successful. Since the plantings are permanent, this amounts to a truly impressive number of wildlife plantings established in the last six years.

What effect have the plantings had on game populations? Yearly inspections of plantings established in 1950 have shown that the annual rate of destruction of established plantings is only about seven percent. This indicates that the plantings are practically permanent, with the majority in good condition and producing plenty of food. Of 46 four year old plantings inspected this past summer, quail were actually observed in four of the plantings when the inspections were made. Signs of rabbits and quail were found in 14 of the plantings. Since the inspections were made when food and cover are normally plentiful, winter inspections would undoubtably show even more signs of use by game. Landowners reported that 40 of the 46 plantings were used by game at some time of the year. Five were used by rabbits and 39 by quail. Other striking examples of the effect of such plantings on game populations have been reported from throughout the State. One landowner in the Sandhills region states that he has increased the number of coveys of quail on his five thousand acres from three to forty in a period of three years by using bicolor lespedeza plantings. Almost every planting that he has established is used by a covey of quail. Another landowner in the mountain region states that he now has several coveys of quail where formerly he had none, through the use of bicolor plantings. No restocking was necessary. A fifty-acre beef cattle farm in the Piedmont now has three coveys where none existed before bicolor, sericea, and multiflora rose were planted. A farmer in the Coastal Plain who had a scarcity of quail established twenty bicolor plantings and now has a veritable hunting paradise.

Even though much has been accomplished in small game restoration, the surface has only been scratched. The job will not be complete until some game habitat improvement has been accomplished on every one of North Carolina's 288,000 farms. A new nursery is being set up to produce larger amounts and a greater variety of planting materials with the help of Soil Conservation

Multiflora rose and bicolor lespedeza seedlings are distributed in air-tight bags to insure live delivery.

Service agronomists. Already being worked into the program are early-ripening strains of shrub lespedeza similar to bicolor, and shrub lespedezas that need a minimum of maintenance. New concepts, such as developments of power-line right-of-way, management of quail in woodlands, and "saturation" of communities or blocks of neighboring farms are being developed. Some of these subjects will be discussed in detail in later articles. The "saturation" idea deserves further mention here.

The "saturation" concept is simply *concentration of effort*. If a large number of farmers in a given locality carry out habitat improvement, much more will be accomplished toward raising game population levels than if only scattered farmers carry out management practices. The same amount of planting stock will be more effective, and by pooling of resources and equipment the cost to the individual farmer can be reduced. An example of the type of planting concentration is illustrated by the map shown in Figure 1, which shows plantings established in three counties in 1953. Such areas offer a splendid opportunity for participation by clubs or individual sportsmen.

This brings us to the last question in our discussion; where does the sportsmen fit into the picture? The answer lies in the fact that the sportsman, more than anyone else, is in a position to provide the farmer or landowner with some *incentive* to take part in the program. This is a very important point. Let's not kid ourselves into thinking that the *majority* of farmers are going to go to the trouble and expense of establishing game food and cover plantings. This is particularly true if the farmer does not care to hunt or does not care to have others hunt on his property. (In many cases such a reluctance is due to some previous injustice or discourtesy on the part of a thoughtless hunter.) The farmer who hunts or who is practicing conservation will probably accomplish some habitat improvements. Other farmers likely will not.

There are several ways in which the sportsman can help to provide the extra incentive needed to accomplish the job. Maintaining friendly relations with the farmer, showing a genuine interest in his problems, and by all means doing him the courtesy of asking permission to hunt will help. Even better would be to try to interest him in the planting stock and technical advice the Wildlife Resources Commission has to offer, and offering to buy the $2.00 sack of fertilizer needed to establish a bicolor lespedeza planting, and actually helping him to set out the plants. Wildlife clubs can do this very effectively in "saturation" projects, where large groups of landowners are involved. There are many other incentives—such as offering prizes for the farmer or farm boy who does the best job. For a detailed listing of these incentives, see "A Blueprint for More Sport" in the November 1953 issue of WILDLIFE, or write for a reprint of this article.

NO HIDING PLACE HERE

This eroded, barren edge of a tobacco field is unproductive for either crops or wildlife. It is wasted land. Below: A clean barbed wire fence will hold cattle, but there is no safe travel lane for quail or rabbits. These two pictures depict conditions found too frequently on many North Carolina farms.

Mr. Sportsman, it's up to you. A good start has been made. Your Wildlife Resources Commission has a sound program, one which offers almost unlimited possibilities. It's up to the sportsman, the farmer, and the Commission, all working together, to do the job. Let's make use of the planting materials and the technical assistance the Commission offers through its district biologists. Give us the opportunity.

District Biologists

District No. 1: William A. Goodson, 905 North King Street, Windsor, North Carolina

Phone: 3551

Bertie, Chowan, Dare, Hertford, Martin, Perquimans, Washington, Camden, Currituck, Gates, Hyde, Pasquotank, Tyrrell

GOOD FOOD AND COVER

A field border of bicolor lespedeza keeps the soil on the farm where it belongs and furnishes an abundant food supply for small game. Below: Besides being cattle-proof, a living fence of multiflora rose is tops for protective cover. Both plants are supplied free to landowners by the Wildlife Commission.

District No. 2: Vacant (Direct correspondence to Upland Game Project, Box 2919, Raleigh)

Beaufort, Craven, Greene, Lenoir, Pamlico, Pitt, Carteret, Duplin, Jones, Onslow, Pender

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District No. 3: Charles B. Woodhouse, Holly Springs, North Carolina

Phone: 434-J-2

Edgecombe, Halifax, Nash, Vance, Warren, Wilson, Franklin, Johnston, Northampton, Wake, Wayne

---

District No. 4: Sam F. Poole, Box 465, Lumberton, North Carolina

Phone: 3704

Bladen, Columbus, Harnett, New Hanover, Sampson, Brunswick, Cumberland, Hoke, Robeson, Scotland

District No. 5: Charles Hill, 1028 Edgewood Avenue, Burlington, North Carolina

Phone: 2322

Alamance, Chatham, Granville, Lee, Person, Rockingham, Caswell, Durham, Guilford, Orange, Randolph

---

District No. 6: David L. Taylor, P. O. Box 901, Albemarle, North Carolina

Phone: 760-W

Anson, Davidson, Montgomery, Richmond, Stanly, Cabarrus, Mecklenburg, Moore, Rowan, Union

---

District No. 7: Ted R. Mitchell, Box 84, Statesville, North Carolina

Phone: 2-1001

Alexander, Ashe, Forsyth, Stokes, Watauga, Yadkin, Alleghany, Davie, Iredell, Surry, Wilkes

---

District No. 8: Edward R. Smith, Jr., Route No. 2, Box 19-B, Morganton, North Carolina

Phone: 1205-XR

Avery, Caldwell, Cleveland, Lincoln, Mitchell, Yancey, Burke, Catawba, Gaston, McDowell, Rutherford

---

District No. 9: Rex L. Bird, 1619 Kensington Drive, Hendersonville, North Carolina

Phone: 6073

Buncombe, Clay, Haywood, Jackson, Madison, Swain, Cherokee, Graham, Henderson, Macon, Polk, Transylvania

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DOES STOCKING PAY?

This editorial appeared in the August, 1954, issue of Michigan *Out-of-Doors,* the publication of the Michigan United Conservation Clubs.

"We sometimes wonder if those barber shop and bar room conservationists who continue to clamour for increased planting of warm water fish in our lakes, against the advice of the Conservation Department fish experts, can remember as far back as 1947 and the great 'pheasant panic.'

"Remember the intense agitation for increased planting of birds and egg production by the State Game Farm while the Game Division was advocating no pheasant planting at all except for emergency or first introduction purposes?

"Remember how the Jackson County Sportsmen's Club campaigned for an intense planting program patterned after Wisconsin and withdrew affiliation when MUCC backed the department game experts?

"Last fall, Michigan hunters bagged more than 1,000,000 ring necks while Wisconsin harvested only 400,000. Wisconsin is planting birds like mad and Michigan stopped five years ago. And it looks like another bumper crop this year of wild, not pen-reared birds.

"It takes courage to support the game and fish experts in the face of some pretty critical fire but it looks like it pays off in the end."

David Peterson

THE SPOTTED WEAKFISH

by J. H. Cornell

Hooked on light tackle, there is nothing "WEAK" about the fighting ability of the Weakfish or "Trout".

The weakfish is one of our most important game fishes in the salt and brackish water of the coastal sounds and rivers. When you take your fresh-water casting rod and troll a plug through some of the deep holes in the fall, winter, or early spring, this fellow is likely to cooperate and give you the excitement you are looking for.

And when you hook your first one, you will find that there is nothing "weak" about his actions. On reasonably light tackle, he will give you at least as fine a fight as most of his fresh water brethren. Actually, the name "weakfish" pertains to the tenderness of his mouth, from which the hook can easily be torn unless the fisherman uses considerable diligence and care in landing his fish..

This fish is locally called the "trout," "sea trout," and "spotted trout" or "speckled trout." Although it is likely they will not be changed, such names are most unfortunate. The fish has no relationship to the real trouts which live in the cold fresh waters of the mountain streams and lakes. Nor is there any valid reason for assigning such a relationship. The weakfish is a worthy sportsman in his own right, and does not need any reflected glory by giving him a fictitious and incorrect name.

Actually, the weakfishes are most closely related to the drum family—the family which includes the croaker, the whiting or "Virginia mullet," the spot, and the red drum or "channel bass." They have the same sort of "drumming" apparatus, and differ only in the arrangement of the vertebrae.

The spotted weakfish usually is identified by its markings. It is dark silver gray above and light silvery below. There are numerous round black spots on the upper body, and extending onto the soft dorsal and tail fins. These spots probably contribute to the common name of "trout."

Unlike some other members of the croaker group, the weakfish has no barbels on its lower jaw. The lower jaw protrudes beyond the upper, which is equipped with two large "canine" teeth at its tip. All species of weakfish have only two spines in the anal fin, and the lateral line extends along the side of the body and out across the tail to its edge. The spotted weakfish has no scales on the soft rays of the dorsal and anal fins.

Habitat

There are three species of weakfish represented on our coast, although only two are common. The northern weakfish, locally called the "gray trout," is commercially important from the southern New England states to North Carolina. Stragglers are found southward to Florida and the Gulf coast.

The spotted weakfish is the species of the southern Atlantic coast. It is very abundant from Virginia southward to Florida, but is relatively scarce on the Gulf coast. The common weakfish of the Gulf of Mexico is the silvery weakfish or "silver trout." This species is rare on all the southern Atlantic coast, although it has been taken as far northward as Maryland.

When you catch either the "gray trout" or the "silver trout," you can identify them easily. Unlike the "speckled trout," the soft rays of their dorsal and anal fins are more or less closely scaled. The "gray trout" is marked by small dark blotches, some of which form wavy oblique lines running forward and downward above the lateral line. This species has eleven or twelve soft rays in the anal fin, and there are ten rows of scales between the anal fin and the lateral line. The "silver trout" is a rather uniform silvery color, and has nine soft rays in the anal fin and eight rows of scales between the spines of the anal fin and the lateral line.

The habitat of the three species is similar in that they are found along sandy shores, and in bays, sounds, and the mouths of rivers, throughout their range. The

centers of abundance of the three species seems to be a function of temperature. The northern weakfish, properly called the "squeteague," is a fish of the colder parts of the Atlantic coast. Its principal spawning ground is in Chesapeake bay, and it is abundant southward as far as Cape Hatteras. Probably the warming effect of the Gulf Stream prevents any considerable migration south of that.

The warm coastal waters associated with the Gulf Stream are the preferred habitat of the spotted weakfish. In the colder waters north of Cape Hatteras their abundance decreases rapidly. The silver weakfish prefers the still warmer waters of the Gulf of Mexico.

Life History

Spotted weakfish spawn for the first time when they are three years old, about twelve inches long, and at least a pound in weight. They are believed to spawn within the coastal bays and sounds rather than in the open sea. Egg counts have shown a nineteen inch female to contain a half-million eggs. Another of twenty-five inches contained over a million.

The eggs are single, non-adhesive, and buoyant. They are broadcast by the spawning fish, and float unattended until they hatch. One author lists the hatching time as 40 hours in 77° water. Another states that it is 12 to 14 hours at 70°. Spawning occurs from mid-May to early July.

One series of growth studies showed the average length at the end of each of eight successive years to be six, ten, twelve, fourteen, sixteen, eighteen, nineteen, and twenty inches. The average weight is from two to four pounds, although a specimen of thirteen and one-half pounds was taken in the Indian River in Florida, and a sixteen pound one was taken in Chesapeake Bay.

Food preferences are difficult to determine. Probably they are influenced considerably by the availability of the forage species. One food study of over two hundred stomachs showed that sixty-one percent had eaten shrimp *exclusively,* and only twenty-four percent had eaten fish. If you were going fishing for weakfish, a trip to the shrimp counter to get some bait would seem indicated.

Another equally erudite study, however, produced the information that the *large* fish ate forage fish almost exclusively—mostly anchovies and silversides. So possibly you should take some minnows along on that fishing trip—or, at least, some plugs that look like minnows.

The spotted weakfish is highly migratory, possibly influenced to a very considerable extent by water temperatures. They arrive in our bays and sounds in considerable numbers in September. In the coldest weather they move into the mouths of tributary creeks and rivers where the water is brackish and congregate in the deeper holes. In May they move on and are very scarce during the summer.

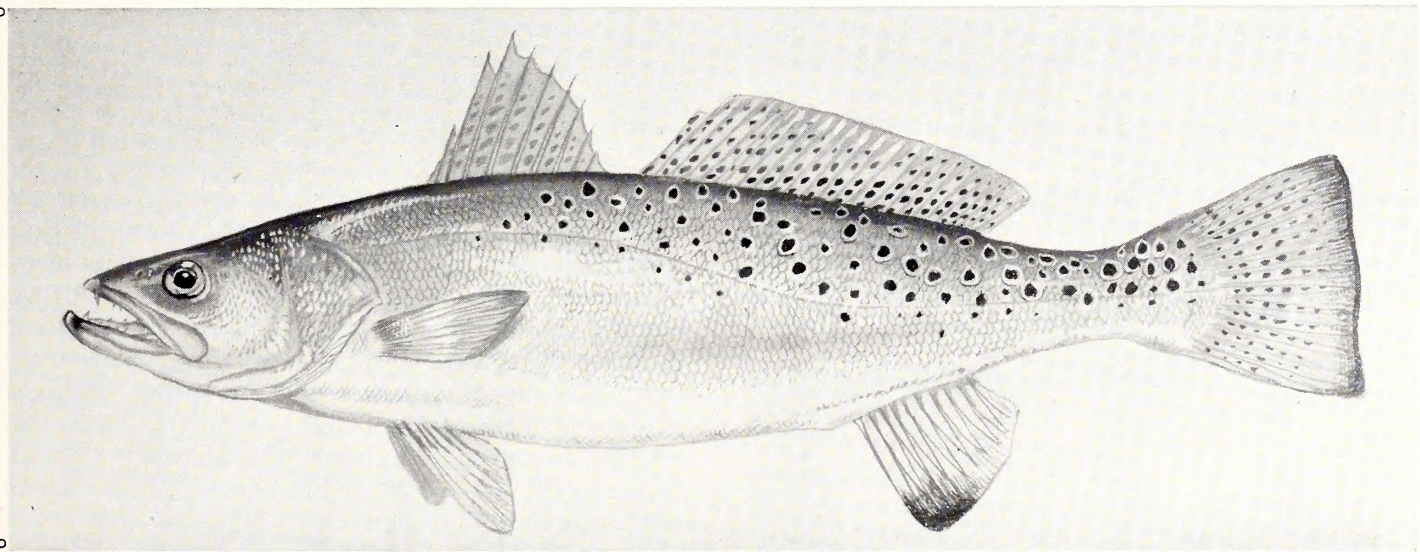


Illustration by Duane Raver

Importance

The importance of this fish to the fishermen is that it is present in greatest abundance in the winter when other fish are scarce. It provides the sport fisherman with a most desirable game fish during those months when there is no other species to take a lure. And at that season, too, it is the most important commercial fish available. Considerable competition frequently develops between the commercial fishermen and the sport fishermen in their efforts to catch the available supply.

As usual, nets are much more efficient than hook-and-line methods. This is particularly true in the extremely cold part of the winter. The fish become so cold that they will not take a hook consistently, nor do they seem to be able to escape the seines.

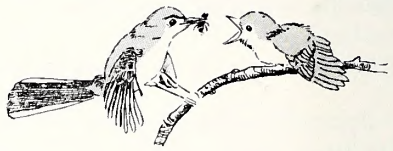
Under the most severe conditions, usually following several days of extreme cold and wind, the spotted

See WEAKFISH page 17

SCHOOL PAGE

OUR EFFICIENT HELPERS . . . *Birds*

by Lunette Barber
Education Representative
Illustrations by Duane Raver



Conservation of natural resources by man is embodied in the philosophy by using these resources wisely, or in another school of thought, applying the principles of natural science to our every-day living, not just to the classroom or laboratory. There is now and will be for years to come a constant struggle to create among all people the importance of wise-use. We shall need all the help possible to bring to a realization this need. One source of encouragement we are now getting, though how seldom we realize it, is from the birds of our country. Let us see then how birds can and do assist man in his daily activity of living.

Birds by their very nature are big eaters. As a group, birds eat a greater variety of food and proportionately a greater amount of food than do other vertebrate animals, for several reasons. The body temperature and rate of respiration of birds is much higher than in mammals, the only other class of "warm-blooded" animals. Food provides the "fuel" to maintain their high rate of metabolism.

Adult birds are much more active than other vertebrates. Imagine the food needed to prepare a bird to cope with the rigors of long migration flights. Consider the energy displayed by a humming-bird, the great distance covered by a nighthawk in an evening as it circles in search of insects. But really the energy user seems to be the chimney swift. It never stops flying from the time it leaves its roosting place in the morning until it returns home at night.

When the birds are feeding their young, much more energy is exerted because their activity continues from dawn until dark to get food for the young. The nestlings require a vast amount of food, too, because of their rapid growth. Birds eat much because of rapidity of digestion; and in case of insect food, there is a very large amount of waste, thus requiring a great quantity of insects to provide sufficient nutriment. Birds do not seem to be calorie conscious.

Then the question would be asked, "Where do the birds get their food?" Some birds depend on food from the water, some from the soil, some from on or near the ground, some in the air, some on trees and plants, and some from a combination of ways. Following are some of the ways which birds assist man:

Birds assist man because they are *enemies of injurious insects*. Among the most destructive insects taken by birds are the grasshoppers and locusts. During August, in certain portions of the country, many birds subsist to a great extent upon grasshoppers. Many of the seed-eating birds are fond of grasshoppers, among them are the song sparrow, field sparrow, vesper sparrow, and chipping sparrow. Of 17 species of birds examined, all but two contained grasshoppers—one, the killdeer, contained 100 percent. On the western plains and prairies, 202 species of birds have been found to feed on locusts and their eggs. Who does not know why the Sea Gull Monument is erected in Temple Square in Salt Lake City, Utah?

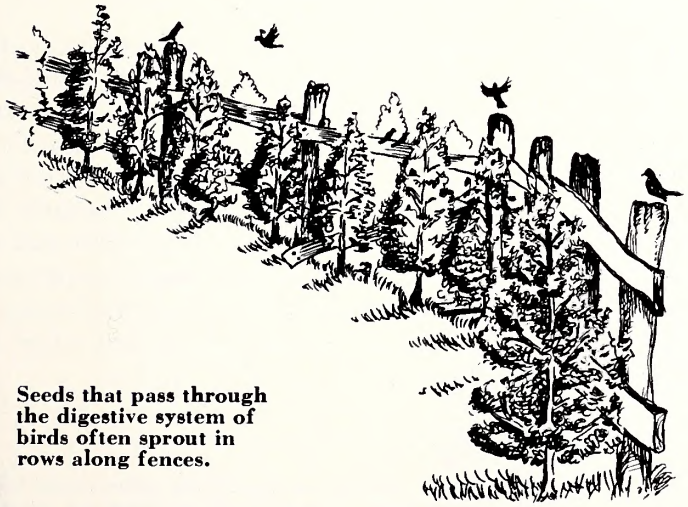
Even the insects that are supposed to be protected from enemies by concealing coloration, noxious secretions, defensive armor, hairy coats, and other means are taken regularly by many species of birds, sometimes in large numbers. Some taken are leafbeetles, fireflies, tree-hoppers, moths, and caterpillars. In winter, birds obtain a great many insects. Chickadees and nuthatches search for insects on rough bark of trees, and woodpeckers obtain insect larvae by drilling into the wood.

Birds assist man because they are *enemies of injurious mammals*. With the exception of insects, rodents are probably the most destructive animals. As with birds, their rate of reproduction is high. Field mice and rabbits increase very rapidly as do some species of ground squirrels and other small mammals. There is little doubt that, but for birds that prey upon them, mice, rats, squirrels, prairie-dogs, and rabbits would swarm over the land and destroy most vegetation, thus rendering agriculture hopeless, unless we could find some equally effective way to combat them.

It is impossible to poison all the rodents. A field biologist located the roosting place of a pair of owls, and over a period of three months picked up from beneath the roost the "pellets" which were regurgitated by them. Upon careful examination and separation of the "pellets" found, he recovered the skulls of over 3,000 field mice.

It has been learned that any great slaughter of birds of prey is followed by an unusual abundance of mice and rabbits. Then, it has been found that where plagues of rodents appear, large numbers of hawks, owls, gulls, herons, ravens, crows and jays demonstrate their utility. Among the most valuable birds we have are hawks and owls. The hawks work by day and the owls by night. In North Carolina all the hawks are legally protected except the Cooper's and sharp-shinned, and all the owls are legally protected except the great-horned, and even these do more good than we are aware. Who in the great out-of-doors removes the sick, diseased, and malformed creatures from their healthy associates for their own benefit?

Birds assist man as *enemies of undesirable plants.* Birds eat weed seeds and grass seeds in winter, and most of these seeds are destroyed because the birds crack the weed seeds or grind them and destroy large quantities. Perhaps the seed that we are proudest for birds to eat is the poison ivy. Among the birds eating it are woodpeckers, warblers, thrushes, grosbeaks, bluebirds, mockingbirds, towhees, vireos, thrashers, kinglets, and sparrows.

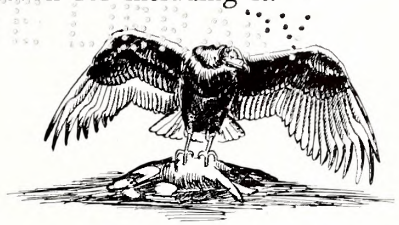


Seeds that pass through the digestive system of birds often sprout in rows along fences.

On the other hand, many trees are planted by the birds by seeds that pass through the digestive system. Look around and see your "old plantation property lines" and you will see rows of cedars that the birds planted when they rested on the fences years ago.

Certain birds feed to some extent on buds, and often do much good as "nature's pruning hooks."

Birds assist man as *scavengers.* What would happen if we as humans never cleaned up around our premises? So in nature God made some birds as "janitors" of the forests, fields, and waters. Vultures feed chiefly on carrion. Gulls were among the first non-game birds to be protected by law. They are valuable around large harbors. The painting of a ship hardly seems complete without gulls hovering near it, though the artist may have no idea of the reason for including it.



Janitors of the countryside, vultures feed on dead birds and mammals.

Sometimes crows, eagles, and vultures feed upon dead fish when stranded on the beaches or rivers. Crows, ravens, and jays search the fields and pastures for mice, squirrels, or rabbits struck down during the storm. They like to find the mammals and birds before they decay. A few hours after hurricane Hazel last October 1st, hundreds of crows were observed near Raleigh picking up small mammals killed during the storm.

Birds assist man as *harvesters of fish in farmponds and lakes.* Most people fail to fish farmponds enough, and the osprey, egret, herons, and kingfishers help out

Herons help keep farmponds from being overpopulated with stunted fish.

enormously to harvest the "unseen" surplus and should be recognized for that accommodation.

Last but not least, birds assist man from an *aesthetic standpoint.* The variety of color, the quality of song, the peculiar antics and habits of them will arouse man's deep rooted emotions. Look to the artist, composer, and

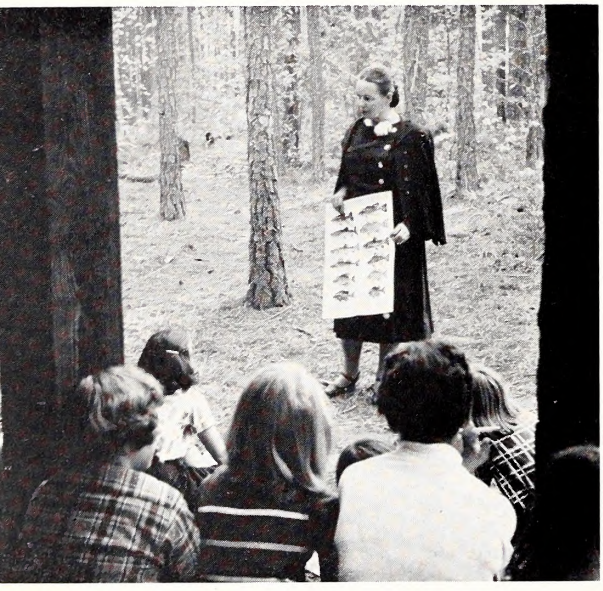
•——————See HELPERS page 20

And she put a turtle in my sleeping bag. Cabin leaders assemble each morning to discuss problems arising when six city children spend the night alone in a cabin in the forest.

A nature hike through the woods begins at the dining h ers are briefed on what they will see. Thorough preparat makes the trip more exciting.

THIS IS SCHOOL?

Photo by Ji



Outdoor classes on the steps of one of the cabins includes an illustrated demonstration on North Carolina's game fish. Below: A discussion of why the lake is muddy leads to a better understanding of the need for soil conservation.

What a way to go to school! As part of the conservation stu grade of the Greensboro city schools, these youngsters spent a putting into practice the conservation and woods lore that they the classroom.

Take 115 fifth grade boys and girls, teach them fundamentals of co and then turn them loose among the rustic cabins and sheltering tree Creek State Park near Raleigh. Take with them a group of i and student teachers from Woman's College in Greensboro, alor lina's Department of Public Instruction, the Wildlife Resources Extension Services of State College, and mix these all together for abandoned quarry, and nature hikes through the forests. Add he out among the pines. Spice the activities with nature games and the children from Lindley Elementary School will never forget. Pr the fourth year of school camping for Greensboro, one of the na young conservationists.

Any questions? A class pauses on a forest trail to discuss some of the things that they have seen. Quiz games are played along the trail, the winning team being first in line for orange juice upon returning to camp.

Wha som ther occa

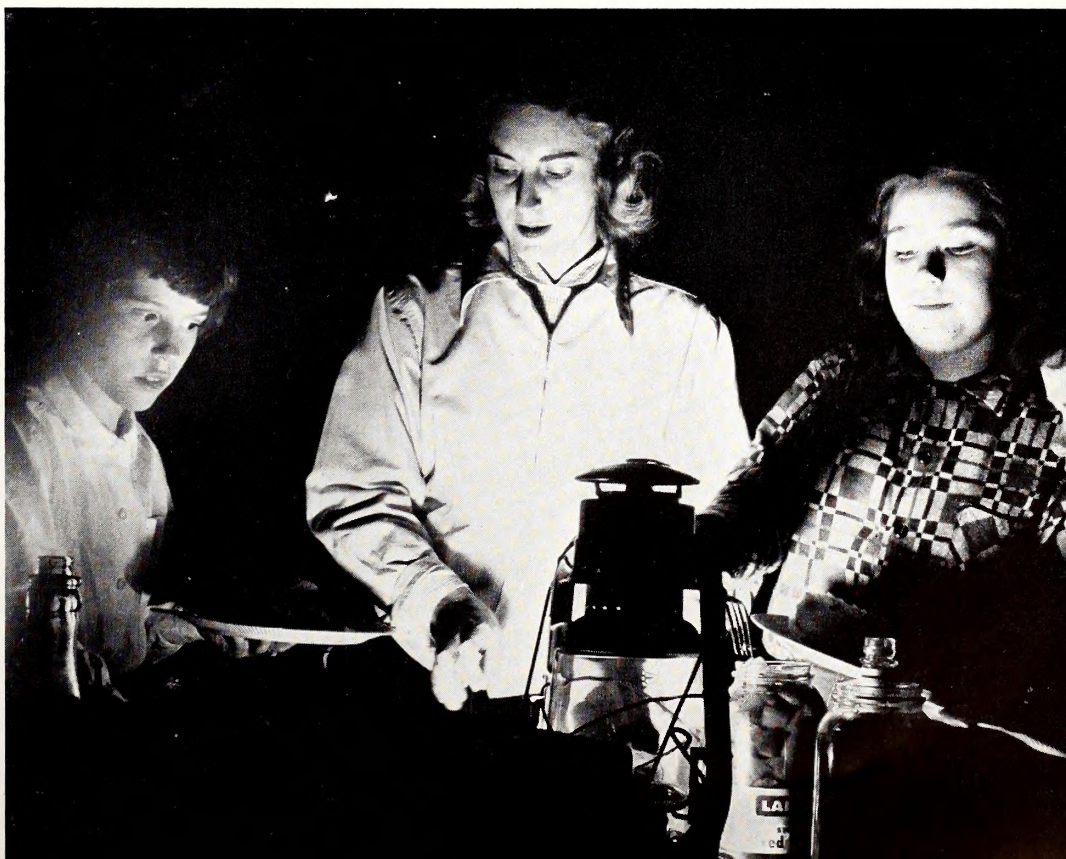
e camp-
ach hike

fifth
camp.
ied in

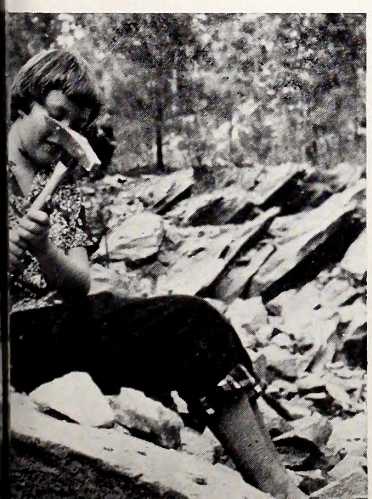
Is it a rock or a fresh-water mussel? The water may be somewhat chilly, but the only way to find out is to reach in and see. Conservation becomes a lively subject when school is held beside a running stream.

and an appreciation of nature.
bove Lake Sycamore in Crab-
achers, some faculty members
ne advisors from North Caro-
n, and the Soil and Forestry
dd expeditions to the lake, an
n the dining hall and a cook-
ne result? An experience that
recipe is the fact that this is
ers in this method of training

There's a little bit of magic in the glow of a kerosene lantern as it casts flickering shadows over the makings of an outdoor supper. The night air sharpens the appetite, as evidenced by one chap who ate four hamburgers.



rock? More rock, of course! But
is young geologist has discovered.
sting minerals to be found, and
fossils.



NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Bicolor Lespedeza Still Available

The Wildlife Resorces Commission still has available a good supply of bicolor lespedeza seedlings for free distribution. Persons interested in obtaining this valuable farm game habitat plant should contact immediately their local wildlife protector, district biologist, or the Commission's office, Box 2919, Raleigh.

* * * *

Wildlife Essay Contest Ends February 28

February 28 is the deadline for the wildlife essay contest being sponsored jointly by the N. C. Wildlife Federation, Academy of Science, and Wildlife Resources Commission. The registration period, during which teachers contacted contest headquarters to enter pupils, ended January 15. Official entry blank forms have been sent to teachers who registered pupils. These forms, properly filled in by the pupil or teacher, must accompany each essay entered into competition. Essays are to be submitted directly to each of six Academy of Science Fair districts for judging.

* * * *

National Wildlife Week Announced

The National Wildlife Federation has announced that the week of March 20 to 26 will be national wildlife week. This year's week will place special emphasis on the conservation and preservation of America's wetland areas. Information from the Federation discloses that of the 120,000,000 acres of swamp and marsh areas that were once in existence, only 30 million acres remain. It is on these 30 million acres that we must now depend for the production of waterfowl and most of our fur resources.

During National Wildlife Week sportsmen's clubs, garden clubs, civic organizations and youth groups are urged to give special emphasis on conserving our renewable natural resources. Program material may be obtained from the National Wildlife Federation, 232 Carroll Street, N.W., Washington, D. C. or State Wildlife Week Headquarters, Box 2919, Raleigh.

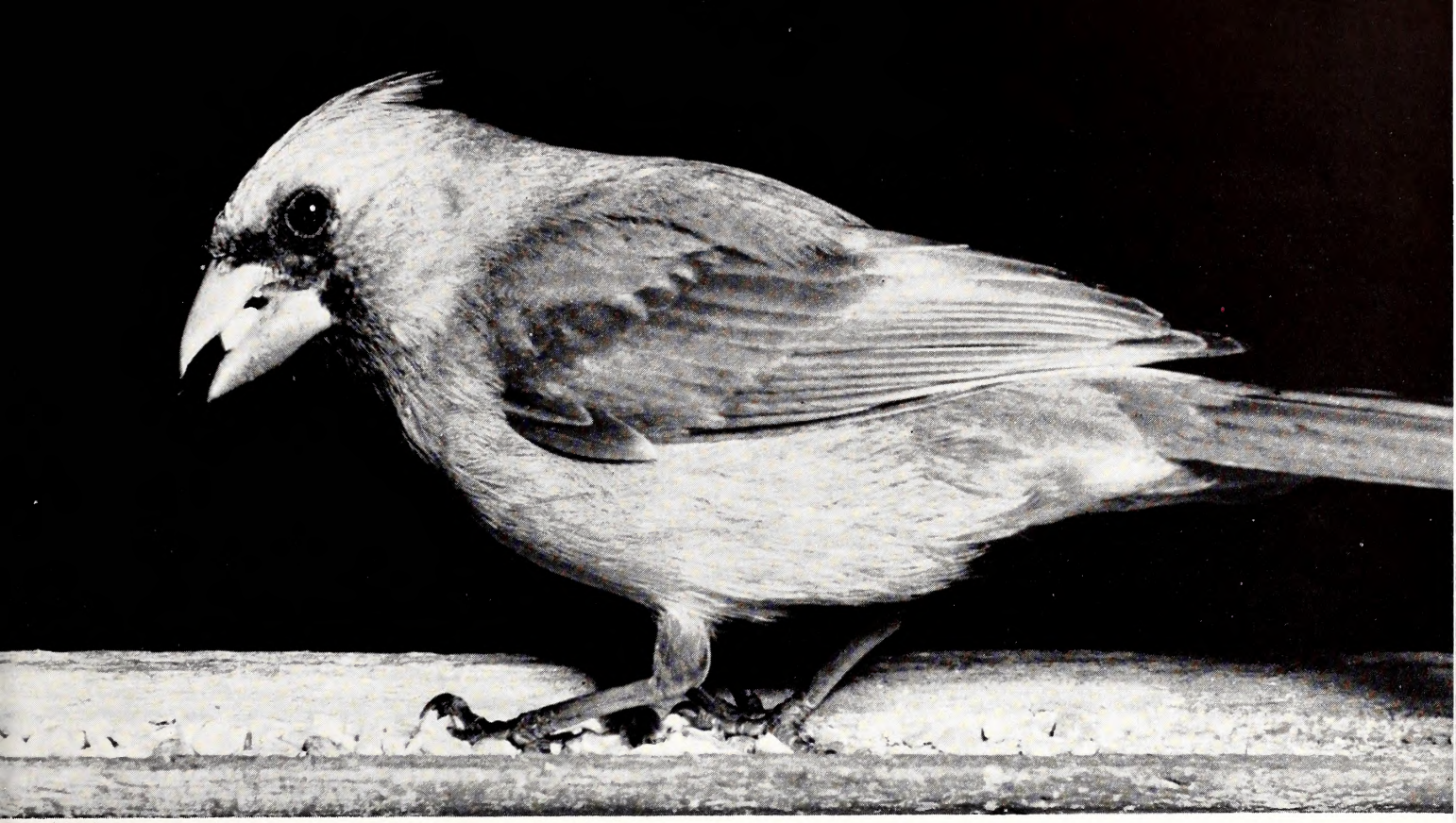


Photo by Jack Dermid

BACKYARD CONSERVATION

OUR STATE BIRD . . . The Cardinal

by Bill Hamnett
Education Representative

A dog came bounding into the backyard of a neighbor's house, stopped suddenly, perked up its ears, and bounded off again toward the clear whistle call sounding forth from a clump of bushes at the property corner. The dog was right—it knew it was right—because its master whistled with that same tone and note. Upon nearing the bushes the dog stopped short because the whistle it obeyed was only one of the clear calls from a cardinal that had been tuning up for its morning song. Yes, this paragon of color, song and habit—the cardinal—unaware of its deed was doing only what come naturally.

North Carolina was wise to choose as her official bird the cardinal. But why! Perhaps the following points of interest may clarify the prudence of the choice.

A field-guide description of this bird says: 7½ to 9 inches. Smaller than a robin. Male: All red except for black patch about bill; *the only red bird with a crest.* Female: Largely yellowish-brown, with some red; at once recognizable by crest and heavy red bill.

It is probable that very few people in North Carolina have not seen the bird. It is statewide in distribution and is seen throughout the year. One of its noticeable traits is its apparent hankering for people. Your home is the cardinal's home.

The cardinal is one of the few birds of our country that possesses brilliant plumage and unusual power of song, and, curiously enough, the female sings a softer song, by no means inferior in its way to that of her mate.

The nest of the cardinal is usually in a thicket of dense bushes or in a brush heap, often on vine-covered fences. It is bulky and loosely built with leaves, bark-strips, twigs, rootlets, grasses, and lined with fine grass or hair. The three to four eggs, basically white to greenish, are blotched with shades of brown or purple.

What family birds the parents are! The male is attentive to his mate, following her about while she builds the nest; sings his best to her at this time which encourages and flatters her to do a good job. While the female is performing the duty of incubating the eggs, the male brings her choice morsels whenever she calls for nourishment. Both parents assume the care of the young, which remain in the nest for nine or ten days.

Food habit studies of this bird, as has been done with many others, shows that it is economically a very important bird to us. According to Dr. W. L. McAtee

(now an adopted Tarheel), vegetal products compose the cardinal's chief subsistence. They constitute over 70 percent of its food which consists of 37 percent weed seed, 25 percent wild fruit, and 9 percent of grain and miscellaneous vegetal substances. Animal food amounts to about 29 percent of the diet. Among the important insect pests eaten are potato beetle, cotton worm, cotton boll weevil, coddling moth, rose beetle, cucumber beetle, plum scale and other scale insects, and often leaf hoppers and jumping plant-lice. Needless to say, the cardinal is a real asset to the gardener and farmer from Manteo to Murphy.

This bird, like others, had to pass through an era of persecution. They were caged and sold in many countries; the trapping, handling and sale of these birds was in the aggregate an important business. At one time in Cuba during a period of public scarcity more than $18,000 was spent for them.

By popular choice, the cardinal was selected for adoption as our State Bird on March 4, 1943. Even though North Carolina had early provided one of the most outstanding leaders in bird conservation, it was one of the last states to adopt an official state bird. The efforts of the bird clubs, garden clubs, and many schools of the state, together with a large number of interested individuals provided the General Assembly of that year with the acceptable choice—the cardinal. The runner-up in the voting, by the way, was the mourning dove, now a recognized game bird.

The ubiquitous habit of the cardinal has caused it to be found in folklore and legend. One of the most delightful is the story about the black feathers on the face surrounding the bill of the male. In substance the tale is like this: Long ago a friendly tribe of Indians were visited by an evil spirit which extinguished all their fires. The curse meant annihilation of the tribe because no warmth, light, or cooked food was possible. The birds heard of the plight and took council. Several birds volunteered to help because never had this tribe breeched the unwritten law of Nature—to take no more than necessary and not to abuse for personal enjoyment. The birds decided to fly to distant places seeking out a hot coal from another nation and bring it back to light these fires again. The crow tried and failed—it couldn't keep its mouth shut. The blue jay tried and failed—its vanity caused it to waver in its course. The eagle tried and failed—its strength of flight was stouter than its heart. The cardinal tried and succeeded. But when it flew down to the council ring of the tribe many noticed that the hot coal it carried had singed and burned the feathers around the beak. And that is why to this day the cardinal has the black marks on its face.

Yes, this paragon of color, song and habit accentuates the meaning to North Carolinians of the words—"to be rather than to seem."

NATIONAL WILDLIFE WEEK

The National Wildlife Federation has launched a campaign to save America's waterfowl marshes from drainage and announced that its National Wildlife Week program in 1955 would be built around the "wetlands" theme.

The purpose, Federation officers said, is to "halt the drainage madness that threatens to destroy the continental flocks of wild ducks and geese and other irreplacable natural resources."

National Wildlife Week, scheduled for March 20-26, has been sponsored annually for 17 years by the Federation and affiliated local organizations. It was started in 1938 when by proclamation the late President Roosevelt called upon American citizens to apply special thought and effort to the problems of natural resource conservation.

PROTECTOR OF THE MONTH

A. Eugene Jones

Born in Chatham County on July 15, 1915, Mr. A. Eugene (Cuckleburr) Jones graduated from Siler City High School and later attended Lees McRae College in Banner Elk, North Carolina for one year.

Mr. Jones' law enforcement training consists of three courses conducted by the Institute of Government at the University of North Carolina and two courses conducted by the Federal Bureau of Investigation in Asheboro. He was employed as the Wildlife Protector for Chatham County in 1946.

Specific conservation problems have been emphasized in recent years. Wildlife Week theme in 1954 was water pollution control. In 1952 and 1953 the nearly extinct Florida key deer and the endangered prairie chicken were singled out for special attention.

In a campaign that starts now and will reach a peak next March the Federation will lead state federations, sportsmen's leagues, and a variety of civic groups in publicizing the wildlife, recreational and water-supply values of the nation's remaining marshes, swamps, sloughs, bayous and upland lakes.

Of some 120 million acres of original wetland in what is now the United States, less than 30 million acres remain that are fit for warterfowl use, according to the U. S. Fish and Wildlife Service. The rest have been destroyed by drainage, water pollution and man-induced drought.

In a recent statement President Claude D. Kelley of the Federation criticized government subsidy of drainage projects in Wisconsin, Minnesota and other waterfowl-nesting areas. Conceding that some drainage has been necessary and beneficial, the Federation president declared, however, that "many such projects have been extravagant failures, costly to the public and resulting in permanent loss of important resources."

Kelley, who lives at Atmore, Alabama, questioned the wisdom of Army Engineer drainage plans in the lower Mississippi valley which, he said, if carried to completion, would "destroy a major part of the wintering grounds of migratory waterfowl."

"Waterfowl and duck hunters won't be the only casualties if the drainage trend continues," the conservation leader added. "Wildlife authorities have estimated that 95 per cent of the American fur harvest—worth $50 million annually at today's low fur prices—is produced on the wetlands of the nation. These same marshes, swamps, sloughs and lakes yield fishing for millions of other sportsmen. Their recreational value is beyond estimate.

"And no one knows what effect continued drainage may have on the declining levels of underground water supplies. Certainly the effect will not be beneficial."

Mr. Jones is a veteran of World War II, married, and has one son and one daughter.

It's the Law!

Question: How may a person establish residence in North Carolina so as to be permitted to hunt and fish under resident licenses?

Answer: Only by actually living within this State for a period of at least six months immediately preceding the date of application for a license. A person may have his legal domicile in this State although he is residing elsewhere. A person may also have two or more residences or places of abode, all in different states. But he can live in only one of them at a time.

The statutes governing hunting and fishing license requirements define "resident citizens" as "all persons who have lived in this state for at least six months immediately preceding" the date of making application for a license. The only exception is that a resident who is required to live elsewhere by reason of being a member of the armed forces does not lose his status as a resident on that account. This does not apply, however, to a person who is required to live elsewhere in order to hold employment he is at liberty to terminate.

Enforcement Record for November

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of November, 1954:

Persons checked		**50,942**
Total prosecutions		**1,060**
Total convictions		**922**
Convictions fined	**575**	
Convictions not fined	**347**	
Total fines collected		**$13,600.90**

WEAKFISH

from page 9

weakfish may become so numb from cold that they come to the surface and may be picked up by hand. Melting snow or ice water running into the rivers may contribute to the condition. Such a "trout numb" was reported as far back as 1709. They do not occur frequently, but many fishermen have observed this phenomenon. It is likely, as our winters get warmer, that "trout numbs" will become increasingly more rare.

Commercially, the spotted weakfish is the most important species in its range. In Florida, the catch in pounds is exceeded only by the menhaden, mullet, and spanish mackerel. In North Carolina it is the most important of all its relatives. Definite figures are not available, but it is estimated to be some five or six times as abundant as the "gray trout." Also it commands a higher market price.

The spotted weakfish is properly a commercial fish. It provides an income for thousands and delectable food for millions. On the other hand, it is such a fine game fish that the sport fisherman should have some rights in it. Some small part of the total population should be set aside for the enjoyment and use of those fishermen who prefer to take fewer fish but to enjoy them on the end of a fishing line. It would be good conservation to protect some of them from haul seines, especially during the coldest weather when they are least able to escape and when they are congregated in the deep holes of the rivers.

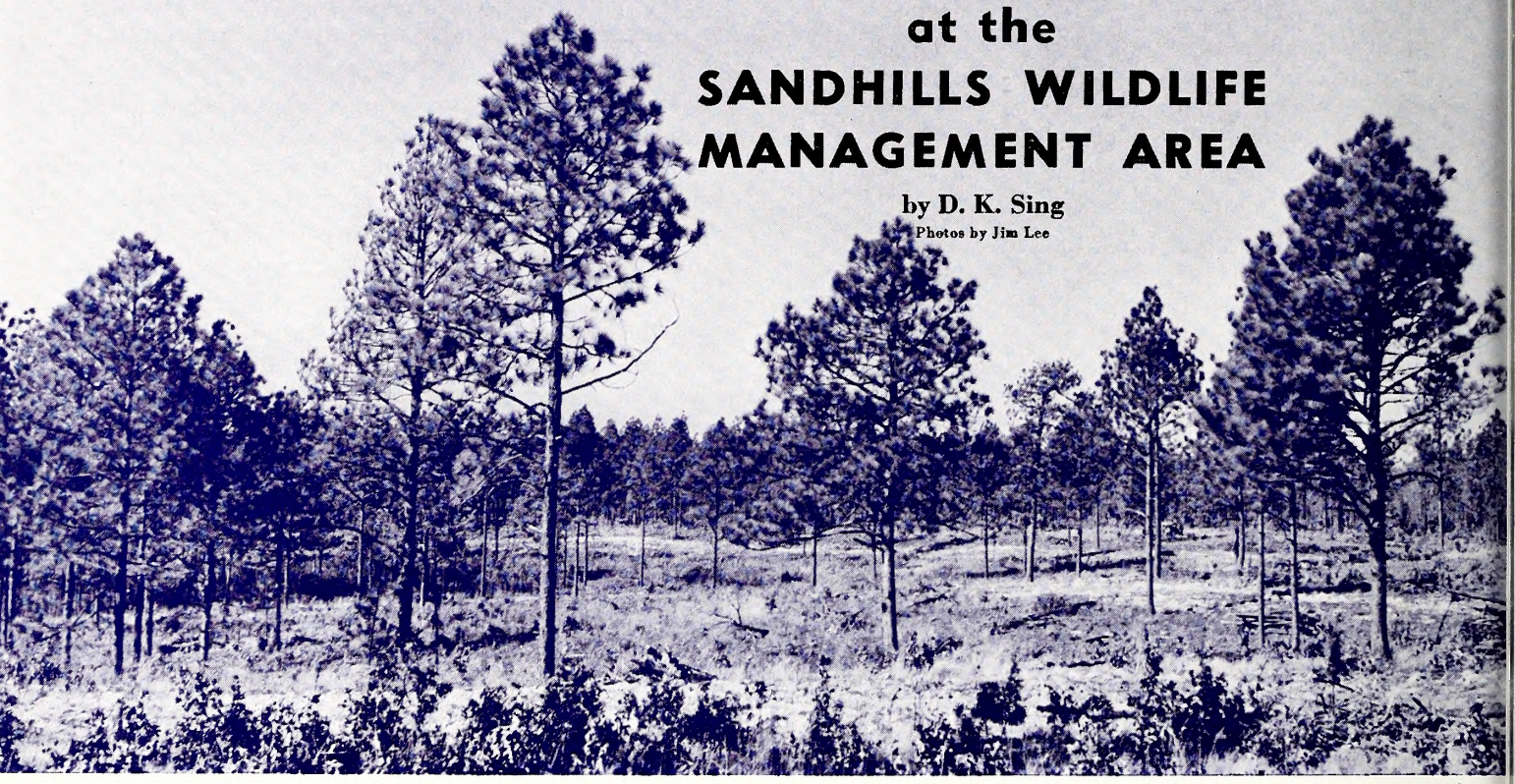
Perhaps, when they cross the line from "commercial waters" to "inland waters," they should be classed as "game fish"—which they really are—and protected accordingly.

FIELD TRIAL COURSES

at the SANDHILLS WILDLIFE MANAGEMENT AREA

by D. K. Sing

Photos by Jim Lee



Clearings in the vast long-leaf pine forests of the Sandhills provide spaces for food and cover plantings, as well as enabling judges to view more clearly the performance of dogs in field trial contests. Typical of the gently-rolling terrain, this clearing extends for more than five acres. The entire field trial course covers a 22,000 acre block.

In the early 1930's, the Federal Government secured the land that comprises the Sandhills Wildlife Management Area which is composed of some 57,485 acres situated in Richmond, Scotland, and Moore counties, North Carolina, near Hoffman. It was developed to some extent by the Civilian Conservation Corps and became a part of the Army's Camp Mackall during World War II.

The Sandhills reservation is so large that a visitor starting from headquarters at Hoffman can drive a full day without leaving the area. There are over 200 miles of dirt roads, many of them firelanes which are maintained by refuge personnel, and another 100 miles or more of paved and dirt roads under State Highway Commission maintenance.

Quail, turkey, deer, beaver, dove, rabbit, opossum, coon and fox are found on this area. There are ten man-made lakes which provide fishing. Timber is the real pay crop of the Sandhills Area, an average cash return of approximately $75,000 a year. It is estimated there are 75,000,000 board feet of timber within the refuge and that the crop is growing at the rate of 5,000,000 feet a year.

The Wildlife Resources Commission uses this area for experimental plots where "rod-row" and larger plantings of over fifty different varieties of grass, grain and cover crops are thoroughly tested. Approximately 5,000,000 bicolor lespedeza plants and 46,000 pounds of annual seed mixture are shipped from Hoffman each winter to sportsmen and farmers throughout the state.

In 1949, the Federal Government deeded to the North Carolina Wildlife Resources Commission these holdings. During the winter of 1950, the Commission decided to build a continuous field trial course on a portion of this area. D. K. Sing, who was then commissioner of the sixth wildlife district; James W. Tufts, secretary of Pinehurst Field Trial Club; Dewey English, the well known professional; Jack Rivers, then area manager and Win Donat of the Commission went to the area to select the best location for a field trial course. The north range of the Sandhills Area was selected which consists of a 22,000 acre block. The courses are laid out in the center of this block, 2,000 acres of which have been improved for quail with over 300 acres in food patches. Work was begun on laying out an 18 mile continuous heat course for bird dogs.

In the winter of 1950 and early spring of 1951, the 300 yard wide and 18 mile long course was logged,

pulped, shrubbed and food patch clearings were made. Approximately 150 patches of bicolor lespedeza, annuals and perennials were set out or planted. Every available old home site was utilized in plotting the course. At the time of the laying out of the courses, it was divided into six heats of approximately three miles each.

Walter Price, refuge manager, reports: "On a limited budget, the smaller patches were enlarged, small grains and annual lespedeza were seeded to aid quail and turkeys. Pokeberry seed was sown each spring for the last three years in conjunction with seeding of bicolor lespedeza. The gradual increase in the number and size of food patches is reflected in the gradual gain of quail coveys.

"In the winter of 1952 and 1953, approximately 200 acres were chopped up with a brush cutter. In the following spring, a large increase of partridge pea was noticed in the treated acres. During the following two summers, quail were observed using these areas that had been released from pine straw and wire grass. Approximately fifty acres of sericea lespedeza furnished some excellent "grasshopper browse" for the quail during the summer months.

"Most of the effort on the courses has been aimed at increasing the natural food supply rather than increasing artificial foods. Native legumes such as wild lespedeza have been encouraged by disking areas that have been covered with pine straw and broom sedge. Results have shown that efforts in this direction have been successful. Small grass, wheat, rye and oats have been planted each fall and allowed to go to seed. These small grains have furnished winter grazing for quail and summer and fall seed supply. Rye seems to stand weather conditions better than wheat or oats.

"Work is under way at this time picking up tree tops and other trash that may impair or injure horses or dogs.

"New patches are being put in shape and disking is underway to set out 150,000 or more bicolor plants this winter. Bicolor seed will be used in the spring of 1955 to sow every available and suitable place that is not practical to set out plants.

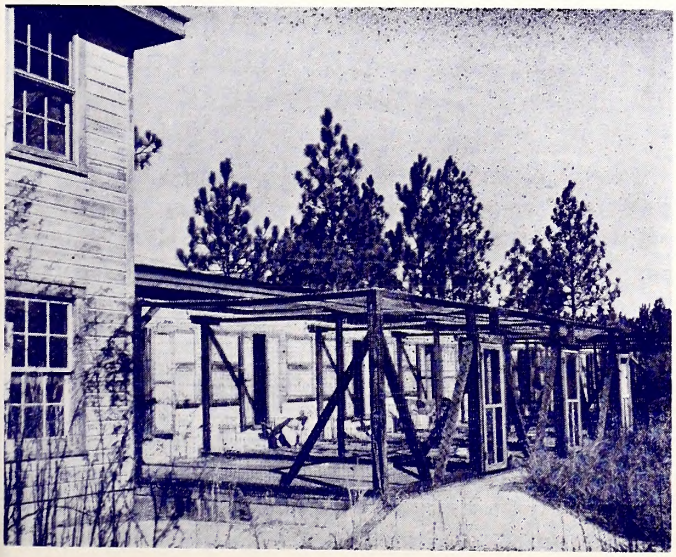
"Americanwild plum is being used for cover thickets. The plants are dug by hand and set out on the areas that lack sufficient cover to protect the birds while they are moving from food patch to food patch. Wild plum is being used as it is native to the Sandhills and does better in dry weather.

"The mechanical condition of the courses has been greatly improved since July, 1954. The roads through the center of the courses have been graded, culverts and bridges repaired and springs cleaned and put in good condition. There is sufficient water on all heats. Heat one as it is now laid out, starts at the barn and runs southwest; two old home sites are included in this heat along with three five-acre fields. Heat two continues through three old home sites and three five-acre fields. Heat three goes through one home site and five five-acre fields. Heat four goes through three home sites and three five-acre fields. Heat five goes through two home sites and several large fields. Heat six goes through one old home site and five five-acre fields.

"At almost any place on the course, you are not over 300 yards from a running stream; most of the time, much closer. Where the road crosses these streams, bridges and culverts were installed.

"Near the end of heat three, a temporary sheet metal building has been erected for noon-day lunch.

Utilizing facilities of the old State Game Farm, kennels have been built near the field trial course to accommodate the dogs entered in contests. These kennels, twenty in number, are of frame construction over concrete.



Walter Price, Sandhills Refuge manager, is shown examining a brush shelter on the field trial course. Scattered about the clearings, these shelters furnish quail protection from predators and bad weather.

About twenty feet from the building, there is a developed spring suitable for drinking water.

"The stables which are located at the beginning of number one course, are being enlarged to take care of horses.

"The kennels are located in the old hatchery building about one mile from beginning of course number one and are being repaired and will furnish ample kennel space for a large number of dogs as well as convenience for attendants.

"It has not been established just how many coveys are on the course, but in early November, a limited check was made and over forty coveys in or near the course were seen. It is planned to trap and release forty more coveys on the courses.

"Additional heats can be added on this vast area as the need arises. Only one public road is crossed on the entire course and no dwellings are to be found on the entire course. All heats are easily accessible by good firelanes at almost any point along the route."

In the summer of 1954, J. William Andrews, Jr. of Greensboro, John M. Culp of Charlotte, D. H. Shoaf of Charlotte, and others became interested and thought that the courses were ready to run a field trial. A meeting was called on August 27, 1954 at the area. All field trial clubs of the state were invited to attend, which is ten at this time. About forty were present. The group made inspections of the stables, kennels and drove over a portion of the grounds. Everyone was enthusiastic about the layout. The group organized the North Carolina Field Trial Association. J. William Andrews, Jr. acted as chairman and the following officers were elected:

President—D. K. Sing, Charlotte, N. C.

Vice-President—John M. Culp, Charlotte, N. C.

Secretary & Treasurer—Arthur L. Carver, Durham, N. C.

Each club was instructed to select two representatives for the next meeting. The representatives are:

Virginia Carolina Field Trial Club
Robert A. Smith and William Day

Cedar Park Field Trial Club
Robert Gidney and W. D. Lackey

Tar Heel Field Trial Club
T. C. Manous and D. H. Shoaf

Central Carolina Field Trial Club
J. William Andrews, Jr. and Dr. Carl B. Wolfe

Durham County Wildlife Club
Ralph Daniel and Hugh Whitted

Stanly County Wildlife Club
Frank Marbrey and Howard Shelton

Western North Carolina Field Trial Club
Dr. W. H. McCall

Piedmont Field Trial Club
Fred D. Keller and Henry L. Ford

Pinehurst Field Trial Club
James W. Tufts

On December 5, 1954, a meeting was held in the office of the Sandhills Area at Hoffman. It was voted to hold the first trial beginning March 11, 1955. Drawing for the amateur stake will be the evening of March 10 for the following stakes:

Amateur Derby, 30 minute heats

North Carolina Winners All Age, 30 minute heats

Gun Dog Classic, 30 minute heats

Open Puppy, 20 minute heats

On the evening of March 13, drawing for the open stakes:

Open Derby, 30 minute heats

North Carolina Open All Age, one-hour heats with a $1,000 guarantee

Headquarters and drawing will be at Holly Inn in Pinehurst.

The Charlotte Observer Perpetual Trophy will be activated for the Amateur All Age Winners Stake after being in the hands of Dr. J. H. Givon who won a leg on it in 1942 with Tarheel Big at the old Carolina Amateur Field Trial Association. World War II halted the running of this trial at that time. A movement is under way to have a perpetual trophy for each of the stakes.

HELPERS

from page 11

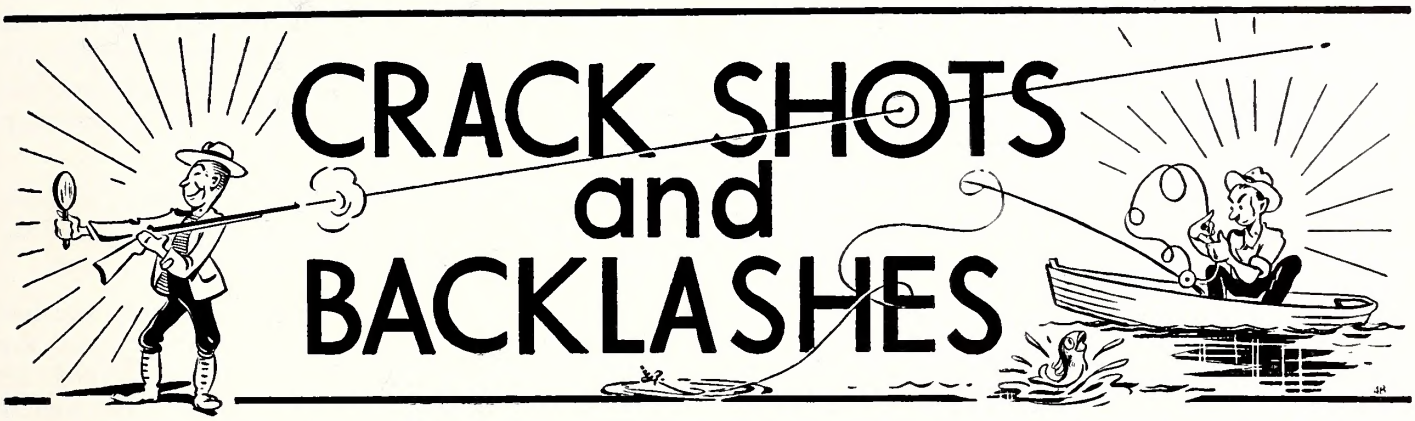
writer who has turned to the birds for inspiration and beauty.

Turn-about is fair play. If the birds assist man so tremendously, it is only fair and profitable that we assist the birds. Many things are being done and can be done for the cause. Perhaps the most important way is to inform the public with accurate facts which would increase public sentiment.

Many school teachers have introduced the study of birds to children. Youth organizations such as Junior Wildlife Clubs, Boy Scouts, Girl Scouts, 4-H Clubs, FFA, and others are stressing the importance of birds. Then there are adult women's groups that are emphasizing conservation—Garden Clubs, DAR, Home Demonstration Clubs, and many others.

Sportsmen's clubs are engaged in efforts to conserve non-game birds as well as game birds throughout the country. Then it would be most unfair to fail to mention individuals and groups who have helped to get the conservation laws of our country and state enacted down through the years.

As was said before, "many things are being done" but much, much more needs to be *learned* and *done* and NOW. Groups and individuals can increase activities as far above their speed limit as they desire. There are no WHAMMIES to check enthusiasm on the Conservation Road!



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

You have probably heard the old one about the racing mare that had a foal on the race track, won the race, and the foal came in second. But the following probably sets some kind of a record for sheer preseverence.

"Dear Sir:

"Blue Tick, a hound owned by A. E. Clark, Beulaville, had two puppies on a coon hunt, after hunt had six more at home. The dog treed one coon, had a puppy, which Clark picked up and put in his pocket. They started out and the old dog struck another coon and helped young dogs tree him, there she proceeded to add another dog to the hunt. They got her out and back to the pen where she had six more. Enclosed is picture of pups and coons, that goes to show we still have a few old fashioned determined coon dogs left in our county."

(As told to a Wildlife Protector by Mr. Clark)

Photo by A. E. Clark

We don't have documentary evidence to prove it, but this one is on good authority. If anyone can add to the details, such as names, dates, exact locations, etc., we'd be glad to pass them along to round out the tale. It seems that near or in the general vicinity of New Bern a fellow had a nice pack of fox hounds. He also had a pet fox that had been raised with the hounds from puppyhood. When the hounds were put out on a race the pet fox ran with them, and of course, returned to the kennels with the hounds. Suppose that fox thought he was a dog? What must the other foxes thought of the whole setup?

February is a good month to contemplate such matters, in addition to Groundhog Day and other trivia. Speaking of groundhogs, not long ago a small island in the Virginia part of Kerr Reservoir was being examined for driftwood, arrowheads, and other bric-a-brac. Someone located a hollow log. In it were one groundhog, one rabbit and one 'possum.

Last January a fellow was bragging about having killed five ducks in one shot. When someone pointed out that the legal daily bag was four birds, he allowed as to how maybe he'd missed *one* of them. Scared it to death?

Captain Homer White sends along an interesting letter about hunting in Deutchland:

"Dear Sir:

"Enclosed is a check for the renewal of my subscription to your excellent magazine. The original subscription was sent to me by a friend about one year ago and I have enjoyed reading them very much. I have done quite a bit of hunting here in Germany since 1946 and find it very interesting to compare the methods of German game conservation with yours and my home state of Georgia. After control of hunting passed from our hands back to the Germans all Americans are required to pass a rather stiff examination on German customs, conservation, and hunt protocol and safety. After obtaining a certificate of proficiency from the three man examining board (usually German and American Personnel) your license may be obtained from the nearest county headquarters.

"Then an insurance policy, minimum 150,000 DMs (approximately $35,714) must be purchased. The license costs is approximately $15, and the insurance approximately $4. You may then hunt on state owned land or upon invitations on privately owned land. All game that you kill belongs to the owner of that hunt and if you desire any that you might kill you must purchase it at going wholesale rates. This money is used by the hunt renters or owners to feed game in the winter, to restock if neces-

sary and to pay damages to the local farmers for any damage, above a fixed minimum, caused by the game on that hunt. This is only a very sketchy description of some of the differences between hunting here and in the states but I am sure other subscribers to your magazine have written you in detail concerning these. I have enough active federal service to retire from the army and propose to do that when I arrive in the States next summer. I hope that wherever I decide to live they have your high ideals and interest in game conservation. I might even settle in North Carolina.

Yours for better hunting,
Homer H. White
Capt. Art."

J. J. Atkins, Waynesville, deserves some recognition and a hearty handclasp. Not long ago he received from the Wildlife Resources Commission a questionnaire asking how many rabbit, squirrel, quail, dove, woodcock, grouse, raccoon, opossum, ducks, geese, fox, turkey, bear, and deer he killed during the past season.

Atkins wrote a zero by each species in the column, and added a note to the questionnaire: "I have not been hunting since 1934, but feel I should buy a license each year to help preserve the wildlife of the state."

Several thousands of game-kill questionnaires are sent out by the Commission each year. Names of recipients are selected statistically from license stubs. If you get one, please fill it in and return it. Information gathered this way is important to our wildlife management program.

* * * *

Thomas Reece, Hickory printer and sportsman sent in this neat little story:

Beware of Slippery Rocks

The story you are about to read is true. Only the names have been changed to protect the innocent and the guilty.

The waters of Steele Creek, gin clear and beautiful as only a mountain stream can be, reflected the bright sunlight of early afternoon. Four eager trout fishermen parked their car beside the stream. They rigged up and entered the stream with keen anticipation. Two of the men were from Hickory and two from a neighboring city. One man, we'll call him Dick, was a trout fisherman of considerable renown, and on the way to the creek he had thrilled his companions with stories of fishing skill. The other fellow from Hickory, nicknamed Pedro, had been trout fishing only a few times. This sport was still mostly "Greek" to him. Those from the nearby city were on their first trip.

After entering the stream, the four stayed together for a few minutes then headed for separate parts of the stream.

A short time later Dick returned to his three friends with a beautiful, fourteen inch brown trout. Proudly he displayed the trout while his friends marveled over the size and color of the brown. With his reputation for fishing ability now secure, and with increased zeal for fishing in the hearts of his friends he returned up stream.

Dick walked in the woods for some distance above his friends in order not to disturb their fishing and reappeared in the creek a hundred yards above them.

Then tragedy struck! He slipped on a rock and fell into the water. His ancient creel came open and the brown was lost in the swift current. Frantically, he searched the water around and below him. His friends rushed up to see if he was hurt. Frantically, they too searched for the fish. But the brown was gone.

It was a mournful group. No end of condolences were given Dick for his great loss. They returned home tired and sorrowful that the trip had turned out this way. But happy too, that Dick had proved his prowess, though his trout was lost.

What actually happened is partly another story. It goes this way: Several hours later, and with no luck, our expert happened upon an old friend from a mountain town. Proudly, he showed Dick his catch. Out of his creel he pulled a fourteen inch native brown trout. Dick's eyes bulged at its beauty and size.

With no trout, Dick was now becoming desperate. He had to have a trout to show off to his friends. A plan turned over in his mind.

Seriously, Dick asked his friend to give him the trout, but his friend refused. However, he did agree to loan it to Dick for a few minutes so he could take it down the creek and show it to his friends. Dick agreed. But there was a problem. Catches of trout had to be checked with the warden before the fishermen left the area. How could he check out with no fish after showing his friends this fine brown? Then genius dawned. He would return the trout, out of sight of his friends of course. Returning to the stream, and in full sight of his friends, he would fall into the water, knocking his creel open thereby losing the contents.

Dick carried out his plan perfectly. His friends marveled at the fine trout and his reputation as a great trout fisherman was safe.

To Dick it seemed almost impossible that anyone would ever find out what really happened. After all, only two people knew what took place.

It was such a good fishing tale that we are almost reluctant to publish the truth, but justice must be served. The great reputation for truthfulness among fishermen must be upheld.

Names will not be furnished upon request.

"Dear Lunette:

"Enclosed is a list of fifteen subscriptions for the WILDLIFE magazine. We would like the subscriptions to start with the January issue.

"Thank you again for all of your help at camp. We surely have enjoyed reading the "Wildlife Neighbors." You should hear the quiz games and tests that the children made up to test themselves on the information, I've never seen a group enjoy the booklets more. Neither did they let me forget the reference work you asked us to do.

"We are looking forward to the January WILDLIFE.

Sincerely,

Evelyn Stewart"

The above is typical of many letters received by Miss Lunette Barber of the Commission's Education Division, who works with teachers throughout the State.

Victim of Ticks

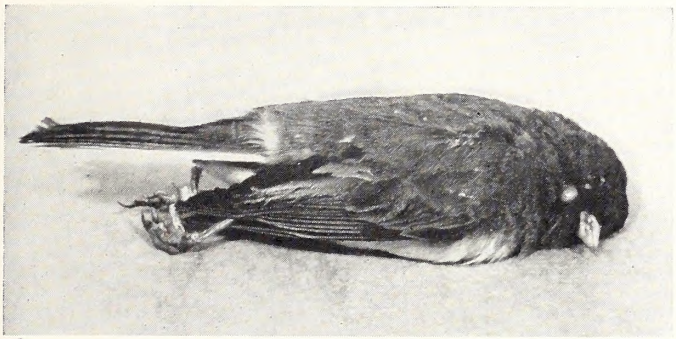


Photo by Jim Lee

Ticks are very uncommon in December, but this junco, or snowbird, had five on his neck when he was found on the front porch of J. W. Simons of Raleigh. Some left the bird when it died shortly after Mr. Simons found it, but one can be seen just above the bird's beak.

L. Ray Ogden lives in Florida, and raises the old predator-bounty problem. We still think predators serve a purpose, and every state that has tried the bounty system is sorry it got involved in it.

"Dear Sir:

"I was interested in your interesting article on the ruffed grouse in the current number of WILDLIFE.

"May I be so presumptuous, however, as to say that I am sorry for one thing that was omitted?

"I am the sworn enemy of black snakes, both kinds. I have read, and argued, and corresponded with those who disagree but I have never been convinced that, with the advance of cultivation and 'civilization' they have a useful place in the balance of Nature. I could back up my belief.

"For more than fifty years I have been actually engaged in hiking, camping, nature counselling, and studying snakes—California, New England, Middle Atlantic, and Southern states. I have convinced many, against their will, with visual proof, and by comparative results. I have attended Audubon camps, and am an active member, but I cannot accept their doctrine on the 'balance of Nature' not after man has so greatly upset, and continues to upset the living space and conditions for desirable species.

"For the blue jay and the great horned owl I hold the same opinion. I have trained a few hunters to call and bag the great horned owl (whose record is such a guarded secret) and these men agree that THIS is hunting with a thrill.

"May I suggest that you read a chapter in a late edition of a book by Kenneth Roberts. In your work, if you have not read it already, you will find excellent material for comment. The chapter next to the last, entitled "Enemies Nobody Knows" in his book TRENDING INTO MAINE makes most interesting and informative reading."

Sincerely yours,

L. Ray Ogden"

"Dear Sir:

"I sincerely agree with the man who says "Do not shoot squirrels with a shotgun." It is absurd to use a full-shot blunder-buss on small game like squirrels. I am 17 years old and am a senior of Hayesville High School. I have been hunting for about three years. Always use a rifle. I know I will be heavily criticized for this but it is merely what I believe. I have quite a few friends who will agree with me, this fellow who signed his name "A Reader," I would like to know better.

Sincerely yours,

Oliver N. Hooper, Jr."

Okay to use your rifle, Oliver, but don't use it for waterfowl or other migratory bird hunting, and don't shoot upland game birds such as turkeys, quail, or grouse while they are sitting on the ground.

Prizes Announced for
ORNITHOLOGY ESSAY CONTEST

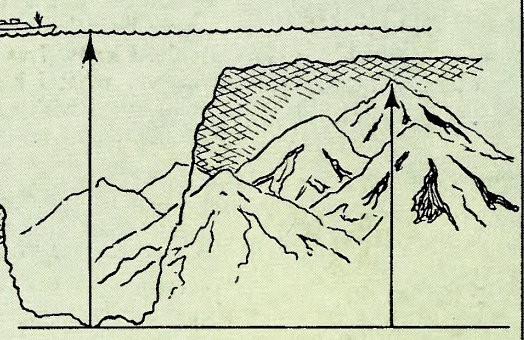
The first, second, and third State prizes in the Ornithology Essay Contest of the State Science Fairs have been set at $50, $25, and $15 respectively. These prizes are in addition to the $10 prize to be awarded in each of the six districts for the best Ornithology essay. For complete details about the State Science Fairs and other prizes offered, see the January issue of *Wildlife*. More information about the Ornithology Essay Contest and a list of references is available from Dr. T. L. Quay, Department of Zoology, North Carolina State College, Raleigh.

Drawn by Duane Raver

"George, I think you're fickle."

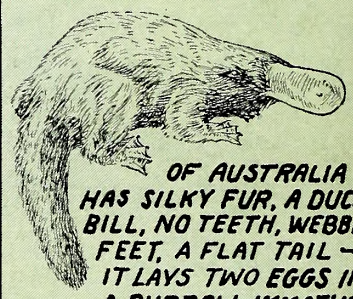
SOME OF NATURE'S QUEER FACTS

DID YOU KNOW

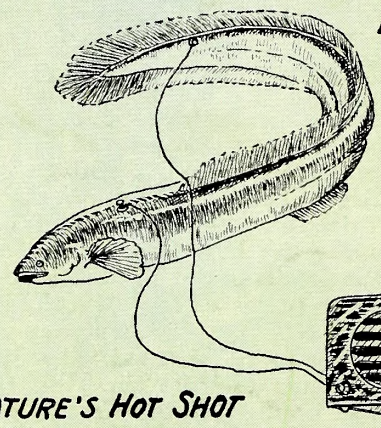


THE MARIANAS TRENCH SOUTHWEST OF GUAM IS 35,640 FEET DEEP - MOUNT EVEREST IS 29,002 FEET HIGH THE PEAK OF MT. CHIMBORAZO IN ECUADOR IS FARTHER FROM EARTH'S CENTER THAN EVEREST - WHY?

DUCKBILLED PLATYPUS

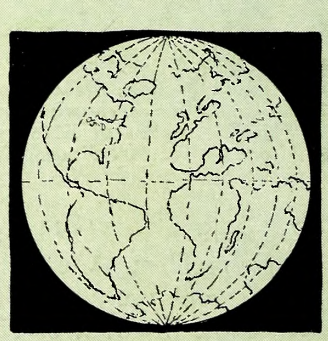


OF AUSTRALIA HAS SILKY FUR, A DUCK BILL, NO TEETH, WEBBED FEET, A FLAT TAIL - IT LAYS TWO EGGS IN A BURROW - IMMATURE YOUNG ARE FOLDED AGAINST MOTHER'S BELLY BY HER TAIL THEY FEED ON MILK SECRETED THROUGH SKIN PORES

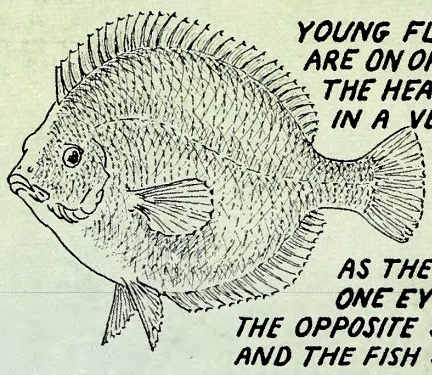


ELECTRIC EELS (MORE CLOSELY RELATED TO CAT-FISH AND CARP) HAVE POWERED SMALL RADIOS LIGHTED 300 NEON LIGHTS AND RUN A TOY TRAIN (NOT ALL AT ONCE)

NATURE'S HOT SHOT



WE SOMETIMES THINK THIS EARTH IS BIG WITH A DIAMETER OF 8,000 MILES BUT IF THIS DIAMETER IS SHOWN BY A LINE 1/16 INCH LONG, BY COMPARISON, THE DIAMETER OF THE STAR BETELGEUSE WOULD BE 169 FEET LONG (260,000,000 MILES)



YOUNG FLOUNDERS' EYES ARE ON OPPOSITE SIDES OF THE HEAD AND THEY SWIM IN A VERTICAL POSITION

AS THE FLOUNDER GROWS ONE EYE MIGRATES TO THE OPPOSITE SIDE OF THE HEAD AND THE FISH SPENDS THE REST OF ITS LIFE ON ITS SIDE

TWO BUMBLEBEES IN THE AIR AT OPPOSITE SIDES OF THE EARTH WOULD CROWD THE AIR MORE THAN THE BILLIONS OF HEAVENLY BODIES CROWD SPACE

Win Donat -1-55

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Wildlife

IN NORTH CAROLINA

TEN CENTS MARCH · 1955

Photo by Jack Dermid

White Prison

Snow and freezing weather spell hard times for wildlife. One night this meadowlark went to roost in a field near Raleigh and awoke the next morning imprisoned in a white tomb. The photographer, passing nearby, was attracted by the bird thrashing about beneath the crust. An opening was made—through which the lark is peeping—and the bird soon escaped, but the experience could have ended in tragedy.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

LUTHER H. HODGES
Governor

North Carolina Wildlife Resources Commission

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COVER

Seldom seen, the otter is much more abundant in North Carolina than popularly supposed. According to Ken Wilson, fur resources biologist, this State is one of the highest ranking states in the nation in otter production. Painting by Win Donat.

☆ ☆ ☆

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Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Jim Lee ..... *Editorial Assistant*
Anne Taylor ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all materials published.

☆ ☆ ☆

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☆ ☆ ☆

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Photo by Jack Dermid

Wildlife

CONSERVATION

IN NORTH CAROLINA

by Rod Amundson

Reprinted from The North Carolina Gardener

A Summary of North Carolina's Wildlife Conservation Program

Is an industry valued at more than $100,000,000 worth saving and perpetuating and increasing? Are the thrill of the call of wild geese, the song of the mockingbird, the flash of a whitetail through the underbrush, the chorus of a pack of beagles, and the whir of a rising covey a heritage worth passing on to the next generation?

A price tag of a hundred millions each year might seem a mercenary way of placing a value on our wildlife resources; but that is the amount of money spent in North Carolina each year by the people who go hunting and fishing. No one, not even a poet, would try to place a price tag on the recreational and esthetic value of our wild creatures.

In 1947 the people of North Carolina, through their elected representatives in the General Assembly, created an agency of government known as the Wildlife Resources Commission. This is a nine man board commissioned to protect and preserve and increase the wildlife resources of our state. The Commission was faced with a tremendous task—providing outdoor recreation in the form of hunting and fishing to a potential of four millions of people each year.

Legally (under the enabling act), North Carolina can have one of the finest wildlife conservation programs in the entire country. A challenge has been given to perform a job of which the people of the state might well be proud. Let us look, briefly, at how this challenge is being met.

In North Carolina, the program of wildlife conservation is conducted on a state-wide basis with emphasis on projects which will serve the most people in the most efficient manner. The nine commissioners are charged with the responsibility of establishing overall policy. This is done at a series of meetings held in various parts of the state. They appoint an Executive Director who is directed to put these policies into operation. The Director, in turn, employs personnel on the administrative and operational level to perform the varied tasks assigned to them.

The Commission is a regulatory body. It has power to set up regulations the violation of which constitutes a crime. Regulating the take of game and fish is a means of rationing the available harvestable supply among the hundreds of thousands of people who seek after fish and game. Regulations are imposed only after the Commission has taken into consideration the findings of its staff of field biologists and has heard and considered the opinions of sportsmen who are given a chance to express their views at numerous public hearings. The system is democratic.

Without enforcement, laws and regulations would be worth little more than the paper on which they were printed. In terms of personnel and expenditure of funds, the job of enforcing the laws and regulations pertaining to the taking of fish and game is by far the largest. Almost half of the Wildlife Resources Commission's personnel and nearly one-third of its

budget go to protect wildlife for law-abiding individuals against the unscrupulous.

An uninformed (and often, misinformed) public is still the greatest bottleneck in the field of conservation today. No matter how well devised and efficiently effected any program of conservation might be, it cannot possibly succeed unless a majority of people support it—either actively or passively. With the concept in mind, the Wildlife Commission carries on an intensive program of conservation-education to secure the public support needed. Fewer than 250 full-time conservation workers cannot possibly provide hunting and fishing for four million potential sportsmen. Through its education program, the Commission is gradually securing needed assistance from both youth and adult segments of our population. More is needed, and more will be obtained.

Wildlife management is the art of making land produce a sustained yield of fish and game for the recreation of people. It is the physical act of maintaining, replenishing, and increasing desirable wildlife species. Specific projects are being carried on in North Carolina to increase the range and stabilize harvestable populations of big game. The farm game restoration program is designed to bring about an annual yield of such small game as rabbits and quail by restoring suitable habitat throughout the state. Parallel projects are being carried on to accomplish the same objectives with fish. With both game and fish, emphasis is being placed on the restoration of suitable habitat. Stocking fish and game serves a need, but given a suitable place in which to live, wildlife species take care of their own problems of replenishment.

Let two examples serve to indicate how the management program is being carried on. Enough farm game habitat plants (multiflora rose, for instance) have been distributed free to cooperating farmers and sportsmen to make a continuous strip fifteen feet wide reaching from Cape Hatteras to a point well beyond the California border. The successful introduction of two non-native species of fish (walleye and white bass) has more than doubled the take of game fish in several of our reservoirs.

No program of any size can be carried on without research. Through a research program, the Wildlife Resources Commission is able to learn the answers to many problems of wildlife conservation. Research serves as a finger to point out the direction where the sportsman's license dollar may best be spent. It determines the basis upon which seasons and bag limits are spent. It is the means by which all conservation practices are evaluated.

Regulation, enforcement, education, management, and research. These are the five basic functions on which North Carolina's wildlife conservation program is based. It is a new program. It is working, successfully; but it needs your support.

NATIONAL WILDLIFE WEEK

MARCH 20-26

"Save America's Wetlands" will be the keynote of National Wildlife Week, March 20-26, according to the National Wildlife Federation, Washington, D. C. The National Wildlife Federation and its affiliate state organizations throughout the nation have selected this topic in recognition of the fact that one of the most urgent conservation problems today is the wise use of marshes and wetlands.

Our country once had 120,000,000 acres of wetlands. Today one-fourth . . . 30,000,000 acres remain. It is on this land that most of our fur bearers and most of our waterfowl are produced.

Wetlands tie in closely with forests, water, soil, and wildlife resources. High prices for farm crops, and the rise of land prices have combined to put more pressure than ever on our marshes—to drain them and put them into agricultural crops. Added to drainage are pollution and siltation, both of which spoil marshes for the production of wildlife.

North Carolina has vast areas of swamps and marshes. Many of these are already in danger from silt, pollution, or drainage. The fur resources of North Carolina are important. The value of wintering waterfowl to the hunters and the people who serve and supply these hunters is tremendous.

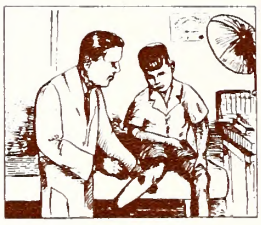
Wetlands conservation ties in closely with the conservation of soils and forests and waters as well as wildlife. Proper management of forests and farm lands would keep silt from clogging streams and filling in marshes. Proper water management, i.e., the cleanup of pollution, cuts down on the health hazard and makes wetlands more suitable for wetlands wildlife species.

The problem is statewide and nationwide. Sportsmen's clubs, schools, civic groups, and other organizations are urged to give special emphasis to natural resources conservation during Wildlife Week and throughout the year. Albums of free information and program materials for National Wildlife Week are available from the National Wildlife Federation, 232 Carroll Street, N.W., Washington 12, D. C., or from the Wildlife Resources Commission, Box 2919, Raleigh.

STRAY DOG CONTROL

Protects Our

Health



Livestock

Wildlife

Nearly one-third of the counties in North Carolina have declared war on the stray dog. These counties represent over two million of the State's citizens. Dog wardens have been appointed, and clean, sanitary pounds have been constructed in every section of the State. This action was made possible by an Act (optional) passed by the 1953 General Assembly which enables the county boards of commissioners to use dog tax funds to defray the costs of the program. For the first time in the history of North Carolina, dog tax funds may be used to control the problems which dogs create.

Stray Dog Control in North Carolina

by Martin P. Hines, D.V.M., M.P.H.

Chief, Veterinary Public Health Section
Division of Epidemiology
North Carolina State Board of Health

Control of the stray dog is one of the best means of assuring that rabies will not become a public health problem. Vaccination of the dog population is also extremely important. The two go hand in hand, and one without the other means little protection against rabies for our citizens and our live stock.

Each year thousands of North Carolinians are bitten by unvaccinated stray dogs making human antibiotic treatment (Pasteur) of such individuals advisable in many instances. A vigorous stray dog control program sharply reduces the number of strays, thereby decreasing the likelihood of human dog bites and thus avoiding the necessity for Pasteur treatment which may be prolonged and is sometimes hazardous.

Stray dogs are a menace in other ways. Last year they killed an estimated 1,000 deer in North Carolina, while no one knows the extent of destruction of small game. All observers agree that the loss is enormous. Each year North Carolina farmers suffer heavily from dog damages. Poultry and sheep raisers suffer the heaviest losses; and when rabies is present among the dog population, it is often spread to valuable cattle bitten by stray dogs.

Man is to blame for this serious problem for it is he who is responsible for the stray dog problem. Curs are driven from home by owners who refuse to destroy them. Too often a cute puppy is brought home and after outgrowing puppyhood is no longer wanted. The neglected dog begins to hunt for food because he is hungry. After acquiring a taste for wild meat (small quail, rabbits, and deer), he will seek it deliberately, often influencing less experienced dogs to do the same. Such dogs destroy thousands of nests and eat eggs as well as birds. Furthermore, quail and turkeys will often desert their nests when disturbed.

Sportsmen also should take stock of their own self-hunting dogs. Often they are as great a menace to game as the stray. Your fine setter, beagle, or deer hound can become or may be a terror or killer on the loose. Do you know where he is during the wildlife breeding season, and during periods of high water and snow which limit the free movement of game birds and animals making them easy prey for dogs? Dogs that are carefully supervised and controlled are of no particular danger to wild animals and birds. On the other hand, much freedom and little discipline permits a dog to form bad habits and associate with mongrel packs.

What You as a Citizen and Sportsman Can Do to Control the Stray and Self-hunting Dog

1. Report strays to the proper authority in your community.
2. Support your county dog warden and local peace officers who have the responsibility for control of the stray dog.
3. Be sure that your dog has been adequately immunized for rabies and is properly tagged. Clinics sponsored by the local health department provide this service at a reasonable fee. This will protect

your dog from rabies and from being impounded. Ask your neighbors to have their dogs vaccinated.

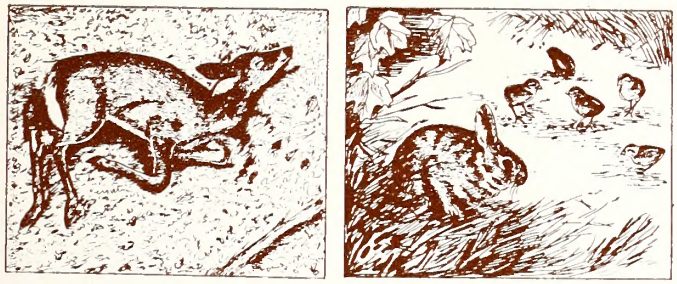
4. List your dog for county taxes. These tax funds can now be used by boards of county commissioners to employ a dog warden to control the stray dog. Insufficient dog tax funds make it impossible to provide this service. Also a dog listed for taxes is protected against theft.

5. All dogs in rural areas should be confined during the game breeding season. Self-hunting dogs destroy an enormous amount of game.

6. If no program exists in your county, discuss the problem with your county officials and have your friends do the same. Impress upon them that a community free of stray dogs is a safer and healthier place in which to live, in addition to the protection provided game and livestock.

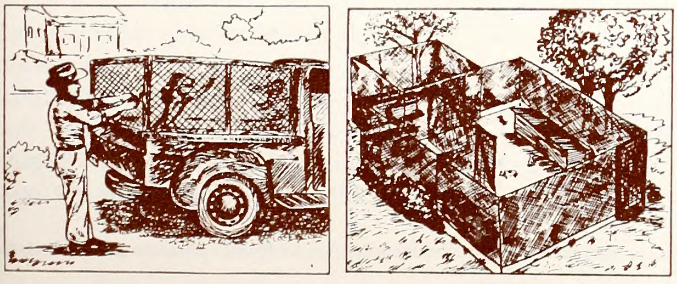
REMEMBER, CONTROL OF THE STRAY AND SELF-HUNTING DOG MEANS LESS RABIES AND FEWER DOG BITES — MORE GAME AND LESS LIVESTOCK LOSS. Does your county have an organized stray dog control program?

Self-hunting dogs, roaming the woods singly and in packs, cause serious damage to game, especially during the breeding season.



Losses to game and livestock could be reduced if owners would keep their dogs penned up during the critical months.

Many counties employ wardens to pick up stray dogs which are held in pounds until claimed. What is being done in your county?



Our Future Sportsmen

by W. L. Hamnett

The Wildlife Resources Commission has long been aware of the potential good being done in the interest of conservation by the youth of our State. This is the first of a series of articles that will give recognition to these individuals and groups. It is hoped that sportsmen and other interested persons will benefit by these experiences. And that they in turn may give a helping hand and encouragement to the youth of their community where such worthwhile activities are taking place. These sportsmen of TOMORROW are preparing themselves TODAY.

* * * *

The year 1954 was *Conservation Good Turn* for the Boy Scouts of America. Here is an example of what the Boy Scouts of North Carolina did. The following is a report of one of the twelve scout councils in our State. Occoneechee Council reports the following accomplishments which I feel sure you are going to be proud of. Remember too, that the other councils did equally as well and deserve your congratulations.

1. **4,656 Boys and leaders took part in the *Conservation Good Turn* Activities.**

2. **There were 587 projects in soil and water conservation, including the following:**

   261 eroded gullies worked on.
   47 eroded stream banks worked on.
   32 acres of land planted to grass to check erosion.
   112 soil conservation talks given.
   24 exhibits built.
   111 miscellaneous projects.

3. **There were 461 projects in forestry, including the following:**

   3000 trees planted.
   158 acres of woodlots improved.
   5000 fire prevention posters distributed.
   187 forest conservation talks given.
   216 miscellaneous projects.

4. **In fish and wildlife conservation 143 projects were carried out.**

   1000 feet of multiflora rose hedge planted for wildlife.
   21 fish conservation projects.
   3000 feet of stream or lake shore improvements.
   2000 bicolor lespedeza plants set out for wildlife.
   92 miscellaneous projects.

5. **There were 430 projects carried out in Outdoor Manners, as follows:**

   2103 Outdoor Code posters distributed.
   4000 Wildlife Guide pledges taken.
   29 talks given.
   4000 hours spent helping conservation officials.
   90 gun safety demonstrations given.
   31 boat and fishing safety demonstrations given.
   83 miscellaneous activities.

* * * *

Mr. Reader, you may know of an outstanding job being done in conservation by a troop or explorer post in your community. How about letting us know about it so we can inform others?

The Role of Fertilization In

FARM POND MANAGEMENT

by Edward B. Bradley

Fisheries Investigator
Photos by Jack Dermid

That old nemesis to pond owners is back with us again. For with the advent of spring, the budding of trees, and renewed plant growth, those perennial questions about fertilization confront fishpond owners once more. But before going ahead with the applications of fertilizer and its advantages and disadvantages, here are some questions each owner should ask himself regarding the physical characteristics of the body of water he intends to fertilize.

On too many occasions, fertilization has been recommended without consideration of the individual pond. Naturally the owner wants to do what is best for maximum fish production. But does he really need "maximum fish production?" Fishing pressure on most of the ponds in North Carolina is so small that the necessity of fertilization is questionable. Let's presume that the pond is fished heavily. Next, the size of the pond is important. Is your pond in that category commonly referred to as farm ponds? That is, from ½ to 3 acres in surface area. Fertilization is simply a means of supporting a greater number of fish in a small area. In larger bodies of water the fish population is generally sufficient to take care of its normal fishing pressure without fertilization. Then too, if the area is greater than three acres, it will be difficult for the owner to maintain an aquatic growth of sufficient depth during the entire growing season unless constant vigilance is maintained.

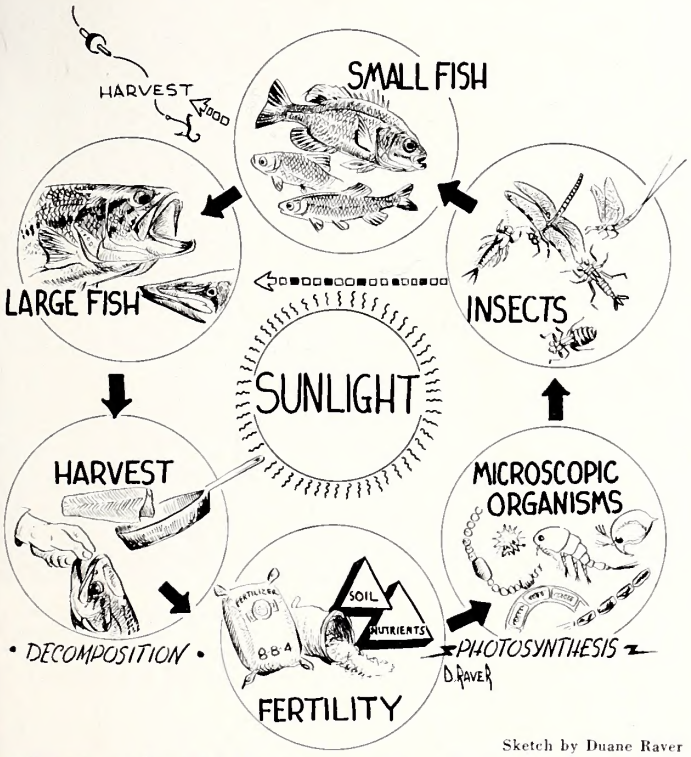
The volume of water going through the pond is very important, too. If there is a constant flow going through the standpipe, much of the aquatic growth produced by the fertilizer in the surface water is going out of the pond. If there is a large volume going through that standpipe, your expenditure of time and money is practically a total loss.

Another hazard in old ponds is the presence of rooted vegetation. Should the owner fertilize a pond where rooted vegetation already exist, the fertilizer will be taken up by these plants. A pond full of weeds will be the result. These ponds should not be fertilized until the weed growths have been removed either manually or chemically. The Wildlife Resources Commission maintains nine district Fisheries Investigators who will give to pond owners technical advice concerning the removal and control of these weed growths.

Shallow water is another enemy of the pond owner. The Soil Conservation Service recommends a two-foot drop-off around the entire edge of the body of water. And for a very good reason too. This prevents the marsh-type plants such as cattails, bulrush, willows, etc. from moving into the pond. Twelve-inch water is not

deep enough to shade out rooted, submergent growths even with heavy fertilization.

But let's presume that the pond can satisfy all of these requirements. And the owner feels that the fishing pressure is heavy enough to warrant fertilization. Then the water should definitely be fertilized. Unfertilized ponds support 100 to 150 pounds of fish per surface acre whereas that same area could support 300 to 400 pounds when properly fertilized. Larger bream and bass can be taken from fertilized waters. A fertilized pond can be compared favorably to a well-fertilized pasture. The basic concepts of pasture and pond fertilization are very similar. All food chains must start with vegetation. But there is one drawback in this comparison. One can



Sketch by Duane Raver

Diagram of the food chain in a farm pond. See text for details.

see when the cattle in a pasture are overgrazing and not getting sufficient food to make the desired growth. Adjustments can be made either by removing some of the cattle or improving the pasture. The fish in a pond can not be observed so easily. Too often the many, skinny and runted fish are mistaken for young fish and not the result of "overgrazing."

When fertilizer is applied to the pasture, more nutrients are added to the soil, which the grasses and clovers take up, resulting in a more abundant growth. When fertilizer is applied to the pond, you are doing the same thing—adding more nutrients to the water which the small, microscopic plants take up, grow, and multiply so abundantly that they discolor the water. The result is what is commonly called a "bloom" on the pond. If ample fertilizer is applied, this bloom will appear in about three days. The color of the water may be green, yellow, brown, blue-green, or red depending upon what species of algae is present. (The color will be predominantly green in North Carolina). This microscopic algae is always present in the water, but only when the necessary nutrients are added will it multiply so profusely that it discolors the water.

This starts a food chain in the pond. There are, too, many small microscopic animals present in the water that feed on this microscopic algae. When the algae is more plentiful, so are the crustacea. And these small crustacea are the principal food supply for the small fish. The small fish are the main diet of the larger fish. Those dragon flies and other insects that you see tapping their tails crazily on the water surface are depositing eggs. These eggs will sink to the bottom, hatch, and remain in the water throughout their larval forms. They feed on the crustacea and algae until they emerge as adults. These insect larvae make excellent bream and bass food. The jelly-like masses with the thousands of dark specks in them soon hatch into millions of small tadpoles. They also feed on the algae and crustacea. The zeal which bass will exert to obtain the tadpoles and frogs around the shallow edges leads one to believe that he would sell his soul for one of these delicious morsels.

So by supplying more nutrients to the water, a more luxuriant pasture has been produced for the fish. The next questions that may arise are what fertilizer should one use and how often should it be applied? In a fish pond fertilizer, a high nitrogen and phosphorus analysis is needed — preferably an 8-8-4. North Carolina is divided into three geographical, climatic zones: mountains, piedmont, and coastal plain. Spring temperatures

In most ponds, improper management coupled with light fishing pressure will result in poor fishing and a high population of little fish within a few years. Farm ponds need to be fished heavily.

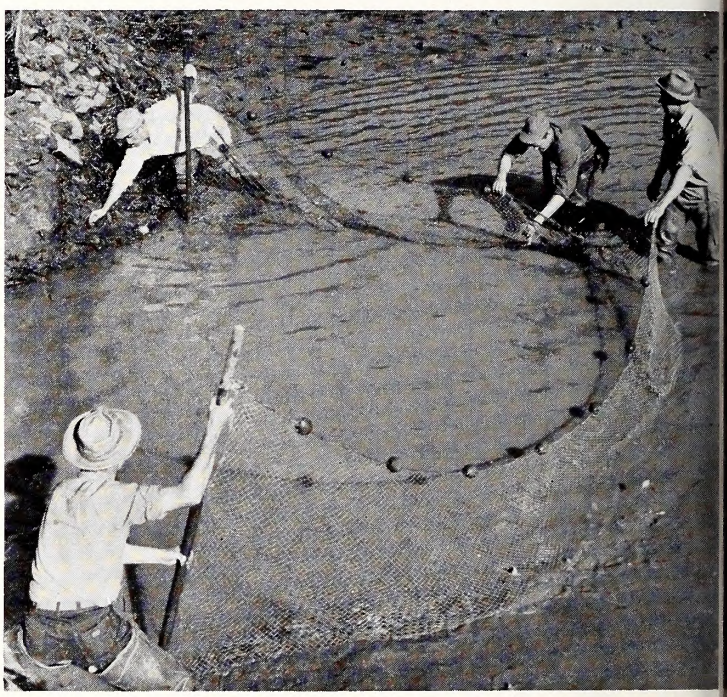
occur first in the coastal plain and move progressively west later in the season. With the arrival of warmer air temperatures, the surface layers of water start warming up too. For this reason, no one can pin-point a definite date to begin fertilization. But as a general guide, make the first application when trees start budding and vegetation is turning green in your part of the state. Normally this will occur in April. Make an application each week thereafter until a shiny object can not be seen through the green color at a depth of 12 to 16 inches. The objective now is to maintain this bloom on the pond at this depth until October. A check can be made on the depth of this bloom with a check stick every two or three weeks. When the shiny object can be seen through the green color at a depth of 16 inches, make another application of fertilizer. Each application should consist of 100 pounds per acre. It can be applied by walking around the edge of the pond, broadcasting the fertilizer out on the water. A check stick can be made by attaching a tin can lid to one end of a 24-inch stick. Twelve inches from the lid cut the first notch and 4 inches above this mark, cut another notch to indicate the 16 inch marker.

Many pond owners have complained that they cannot purchase a fish pond fertilizer (8-8-4) in their area. A substitute can be made by adding the proper amount of nitrate of soda to any of the commercial grade, low nitrogen fertilizers in the conversion chart below:

Commercial Grades	Nitrate of Soda to 100 lbs. of fert.	lbs. of mixture	lbs. of mixture per acre
4- 8-4	20 lbs.	120	120
6- 8-4	10 lbs.	110	110
5-10-5	25 lbs.	125	100
3-12-6	45 lbs.	145	97

But why all the caution regarding what ponds should be fertilized and those that should not be fertilized? When speaking of proper fertilization, it is interpreted as maintaining a bloom at a depth of 12-16 inches during the entire growing season. Partial fertilization can do the pond more harm than any temporary good that may be derived. All individual bodies of water differ in fertility depending upon the type of runoff or source of water supply. If pasture runoff is the source, the incoming organic matter plus the addition of a small quantity of fertilizer may hold a constant bloom to the water. Runoff from cultivated and forest lands will require larger quantities. Our point here is, that if fertilization is discontinued after once started, the color to the water may disappear thus opening up the top layers of water so that the sun can penetrate to the bottom zones of the pond. This condition plus the little fertilizer that has already been applied may encourage the growth of undesirable, rooted, aquatic weeds. A pond owner's headaches haven't begun until he finds his pond "wrapped up" in these weeds. They are extremely aggravating to fishermen. But more important, they offer escape cover to the bream and thus interfere with the normal, expected bass predation. Very quickly the pond can become overpopulated with bream and "overgrazing" starts.

It is not the purpose of this article to discourage fertilization of ponds. To the contrary, it is hoped that it will encourage fish pond owners to use that fertilizer dollar more wisely and to harvest a greater percentage of those fish.



Once the natural balance of a pond has been destroyed, the best remedy is to completely remove the existing population of fish and restock correctly. Below: Besides being a waste of money, improper fertilization can result in the rapid growth of noxious water weeds.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

200,000 Adult Trout Being Stocked

Work is under way stocking nearly 200,000 brook, brown, and rainbow trout in 1,384 miles of public mountain trout fishing streams in Western North Carolina. The fish, the result of last year's production, range in size from seven to twelve inches. The Wildlife Resorces Commission plans to stock over 62,000 before the season opens, and the remainder will be stocked as the season progresses. In addition to the keeping size fish, thousands of fingerlings will be stocked in the headwaters of streams as a further supplement to natural production.

* * * *

List of Designated Trout Streams Available

Trout fishermen who wish to learn the names and locations of North Carolina's designated public mountain trout fishing streams may obtain complete lists of such streams by writing to the Wildlife Resources Commission, Box 2919, Raleigh. The lists have been printed as a service to trout fishermen.

* * * *

Bicolor Lespedeza Still Available

The Wildlife Resources Commission still has available a considerable supply of bicolor lespedeza seedlings for free distribution to persons or clubs desiring to obtain them for farm game habitat improvement. For information on how to obtain these plants, write directly to: Wildlife Resources Commission, Box 2919, Raleigh.

* * * *

National Wildlife Week Set for March 20-26

National Wildlife Week, sponsored by the National Wildlife Federation, will be observed in North Carolina during the week of March 20-26. During this time special emphasis will be placed on the conservation and preservation of the State's and Nation's wetland areas, in addition to stressing the importance of the wise use of our soils, waters, forests, and wildlife. Governor Luther Hodges plans to designate this week for special observance in North Carolina.

* * * *

Going Fishing? Check Your License!

As the spring fishing season approaches, the Wildlife Resources Commission cautions anglers to be sure that they go astream equipped with the proper fishing license. Holders of combination hunting and fishing licenses may fish until August 1 on licenses currently in effect. Ordinary fishing licenses are effective with the calendar year. Trout anglers who fish designated mountain trout fishing waters will need special trout licenses when the season opens April 5.

During autumn's harvest, bushes, grasses, and trees are heavy with many varieties of wildlife foods. But how does the range look in late winter?

Bird tracks in the snow lead to the remaining berries on a honeysuckle vine.

When snow blankets the landscape, the winter woodland becomes a l which have to forage long and hard to keep alive—it is a world of ha

Late Winter: The Critical Tim

Photo Feature by Jack Dermid

During the early part of the hunting season, sportsmen tramping over the countryside are often amazed at Nature's productivity. Autumn's harvest of acorns, berries, persimmons, grass seeds, and other fruits hang heavy upon trees and bushes and litter the ground. It seems there is enough food for all forms of wildlife with some to spare.

These same hunters often return home empty-handed or with a light game bag. "The food's there," they say, "and the cover's good." They are puzzled that game could be so scarce in a land of plenty.

But the abundance of autumn is deceiving. The same range will present a totally different picture in late winter—in February and in March before the new foods of spring appear. See for yourself by taking a hike over your favorite hunting grounds this month.

The litter of acorns on the forest floor is but a remmant. An important food, many have already been consumed by wildlife, and those acorns that remain have sprouted or are decay. It is the same story, even more so, with mar seeds. Gnawed hickory nuts and empty pokeberry bus of past abundance. In the fields—those that have n made barren by early plowing—grass stalks stand em there are no beggar-ticks to cling to your trousers. Tl is not as good either. It has been lost to wind and rai some places matted down by snow.

Just as the strength of a chain is measured by the of the weakest link, the population of wildlife a ra support is determined largely by its carrying capacity the critical months.

How do your hunting grounds look now? In late it is easy to see where bicolor lespedeza and multifl could be planted to advantage or where waste areas boost with a planting of annual seed mixture. All are fi free to landowners by the Wildlife Resources Com

estry of glistening white and shadow. It is not so beautiful to wildlife unless the range contains good food and cover, mortality will be great.

Many of the acorns that remain have sprouted or are lost to decay. Below: Once laden, heads of sumac have become thin. Many wildlife foods have completely disappeared.

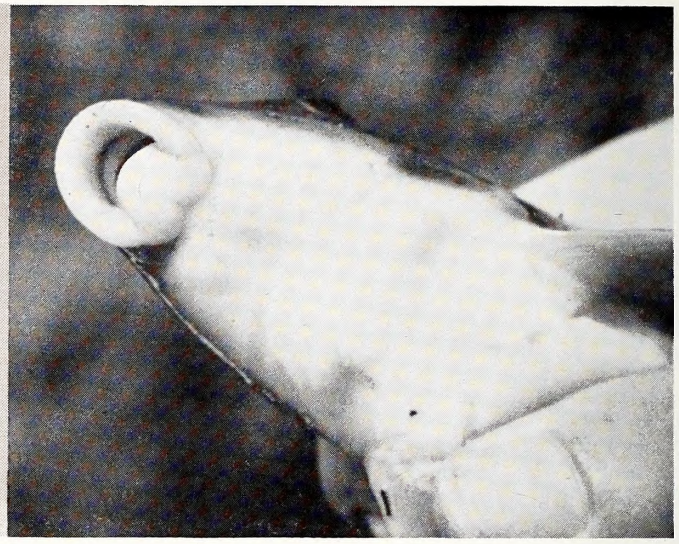
or Wildlife

Good hickory nuts are hard to find, and gnawed ones are reminders of the big feasts of autumn.

Closeup of bicolor lespedeza seeds. Bicolor is a plant that really proves its worth when other foods are scarce, for it drops its seeds gradually throughout winter and early spring.

THE COMMON SUCKER

by J. H. Cornell



This closeup of a common sucker shows the mouthparts which are adapted to bottom feeding. The sucker feeds like an animated vacuum cleaner.

The common or white sucker is the most generally distributed of all the suckers in North Carolina. It is taken by the commercial fisherman in the lower Neuse River, and, early in the spring, by the small boy with his cane pole and worm as he fishes the smaller tributaries. Along with other members of the sucker family, it is caught consistently in the Yadkin and smaller streams of the piedmont section of the state.

Even the trout fisherman, as he approaches a deep hole in some high mountain stream, has been known to substitute a worm for the fly he has been using and slip it carefully into the deepest water ahead. It may produce the outsize specimen of Salmo or Salvelinus that he is hoping for, but more than likely the tug on his line will attach him to a homely and snub-nosed Catostomus.

Depending on the temperament of the fisherman, the sucker may be tossed back in the stream or slung with great disdain into the nearest laurel thicket. Not infrequently though, and after surreptitious glances up and down the stream to assure solitude, the sucker is carefully placed in the very bottom of the creel and covered with stream-bank grasses and three or four previously caught ten-inch trout. From that vantage point, a two-pound sucker can add considerable weight to any subsequent bragging the fisherman may care to do as friends are permitted to heft his creel.

The white sucker usually has twelve rays in the dorsal fin, seven in the anal, and about sixty-five scales in the lateral line. It is rather olive colored above and lighter below. Like all members of the sucker family, it has no spines in either the dorsal or anal fins. The turned-down or "inferior" mouth, with thick protractile lips, is characteristic. In fact, the scientific name "Catostomus" means "inferior-mouthed." This structure makes possible their normal feeding procedure. Like an animated vacuum cleaner, the sucker moves along the stream bottom, taking up the smallest aquatic animals, the aquatic larvae of insects, and fish eggs when they are available.

Another member of the sucker family which is almost as generally distributed over the state is the so-called "red-horse." Actually the "red-horse" suckers consist of several species, but are named for their bronze backs and reddish fins. Most of them belong to the genus Moxostoma which means "sucking-mouth." These, together with the common sucker and the chub sucker, constitute the commonly but incorrectly termed "Fresh-water mullets."

There is another whole group of species which are members of the sucker family, but which are not generally recognized as suckers by the fishermen. Only occasionally are they taken by hook and line, and their presence in large numbers may go almost unnoticed in waters where net fishing is not permitted. this group includes the large-mouth and the small-mouth buffalo, the chub-sucker, and the various carp-suckers including the quillback and the "river carp."

Most of these species more or less resemble a carp in appearance and several of them belong to the genus "Carpiodes," meaning "like a carp." It is not surprising that John Lawson, who traveled through North Carolina in the early seventeen hundreds, reported carp as being present in the rivers when there actually was not a carp nearer than Europe.

The carp, which was imported to this country in the latter eighteen hundreds, is a member of the minnow family in spite of the similarity of its appearance to some of the suckers. Although the greatest difference is in their skeletal structure, you always can tell them apart by the fact that the first ray in both the dorsal and anal fins is a serrated spine if it is a carp. None of the suckers have spinous rays in their fins.

Habitat

The common sucker is not limited by habitat factors to such an extent as some other species. It is found in greatest abundance in larger creeks and small rivers, although ponds occasionally have large populations. Clean gravel stream beds seem to be preferred, but silted streams may also be occupied. One requirement is pure water. Either municipal or industrial wastes may kill every sucker for miles downstream, even though some other species survive.

The red-horse suckers also are very generally distributed, although different species constitute the distribution. The golden red-horse, for example, is a fish of the Mississippi watershed. Before the days of power dams and pollution, tremendous runs of them came up the Little Tennessee and French Broad rivers. The runs are much reduced in recent years. Another red-horse, sometimes locally called the "white mullet," ranges from the Dismal Swamp to Georgia and is commonly found in our coastal streams and rivers.

The carp-suckers are little known residents of some of our piedmont power reservoirs, and appear to have replaced, at least in a small way, some of the large runs of red-horse suckers which came up the Catawba and Yadkin rivers before the dams were built. The carp-suckers seem to be able to withstand more siltation than the other sucker species.

The chub-sucker, often known simply as "mullet," is generally distributed in all of our unpolluted streams flowing into the Atlantic Ocean. It is most common in the smaller streams in the southeastern part of the state, especially in the area from New Bern to Wilmington to Rockingham. This species is a light brown or bronze in color and seldom exceeds ten inches in length.

Life History

The outstanding aspect of the life history of all the suckers, and one with which every fisherman is acquainted, is the upstream runs at spawning time in the early spring. They move mainly at night and rest in the bottom of deep pools or under cut-banks or rocks. Breeding takes place after they reach small clean gravel bottoms of spring branches where the water is moderately swift. Some species can spawn successfully in lakes when their preferred spawning grounds are not available. After the eggs are deposited, the spawning fish soon return to larger downstream waters.

The young suckers look very much like some of the minnows, and even may be mistaken for bass fingerlings when they are observed swimming in schools near shore. They may grow as much as two inches in four months, five inches by the end of the first year, and eight inches in two years.

Like the young of nearly all fishes, the sucker fry feed on the smallest forms of animal and plant life. At this stage they compete with the game fishes for the common food supply. As they grow larger they add more and more of the larger bottom organisms to their diet. Although algae seems to form a part of their diet throughout life, they are mainly carniverous. The most important food is the large numbers of aquatic insects, larvae, and nymphs which are sucked up and strained out of the bottom sand and mud.

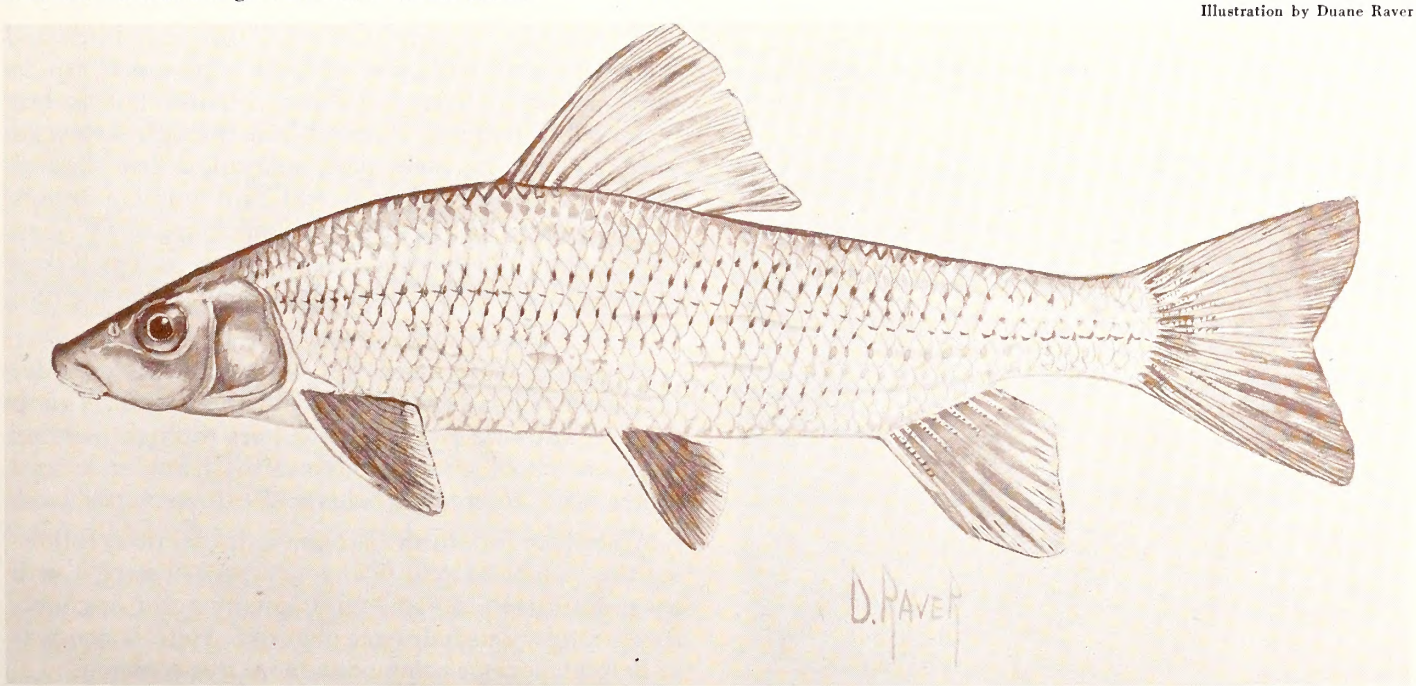
Importance

The value of suckers as food is a moot question. When they come from weedy waters, they tend to be rather strong flavored, but from clean water the flesh

•——————————See SUCKER page 18

The red-horse sucker illustrates the carp-like appearance of the sucker group, but lacks the serrated spine of the carp. The bronze back and reddish fins give the red-horse his name.

Illustration by Duane Raver



SCHOOL PAGE

LIVING WITH TREES

by John Gray
In Charge, Forestry Extension
North Carolina State College

Have you ever stopped to think how hard it would be to live through a single day without using something made *of* wood or *from* wood? That bed you got out of this morning probably had a wooden headboard, footboard and side rails. Some of the clothes you put on were made entirely of rayon or artificial silk or rayon blended with other fibers. You walked across a wooden floor, opened a wooden door and picked up a newspaper. You stepped on a linoleum rug when you went into the kitchen for breakfast. You poured cream or milk into your coffee from a waxed pulpboard container. Your wife or your mother took eggs out of a paper box and bread from a cellophane wrapper to make your breakfast. When you got through, you wiped your hands on a paper napkin, put on a hat with an artificial leather sweatband and walked out of your wooden or partly wooden house to go to work. You had already come into contact with twelve products made entirely or partly from wood grown on trees and your day was just beginning.

A lot of trees must be grown to fill our daily needs. Yet an acre of southern pines in reasonably good productive condition produces a tremendous volume of useful products in just the amount of wood added through growth in one year.

Foresters will tell you that a growth rate of a cord of wood (a stack of wood cut in 4-foot lengths stacked 4 feet high and 8 feet wide) per year is normal from reasonably productive southern pine forests. This yearly growth from 1 acre will make enough newsprint for 4,592 copies of the Raleigh "News and Observer." It will beat a good cotton yield—one 500-pound bale of lint per acre—all hollow as a source of fiber for making cloth. When the cord of wood is processed, it will yield 921 pounds of cellulose fiber ready to be made into rayon.

This longleaf pine, planted as a memorial by the senior class of Micro school in 1929, adds interest and beauty to the school yard.

Yes, an acre of productive timber will grow an amazing amount of material used by us in everyday life. Yet we use tremendous quantities of forest products. If you are an average American, you use about 400 pounds of paper and wood pulp products in each year and over 200 board feet of lumber. And our needs for the products of our forests are growing with our rapid population increase. Each day that passes, our increased demand is equal to the yearly growth of 6,600 additional acres of productive pine forest. Thus, a continuous large-scale program of improving forest productivity must be carried on by all forest owners—public and private.

Yet, products such as paper, lumber and furniture are not the only contribution that forests and trees make to our comfort and well-being. Trees have a tremendous influence that is hard to measure in flood control. The soil in ungrazed mountain woodlands, for example, is like a gigantic sponge as a result of tunnels made by tree roots, the formation of humus through the decay of leaves deposited each fall by the tree cover, and the action of earthworms, mites, insects and fungi. Such soils can hold and store half or more of their own volume in water, filter and feed it gradually into streams after the rainstorm is over. Thus, from forested watersheds, properly managed, we get a steady supply of cool, clean water—the kind you look for if you are a trout fisherman because it is the only kind in which brooks and rainbows are able to thrive.

As a home and source of food for game birds and animals our forests serve us in a way which can be measured in dollars and cents perhaps, but is best measured in terms of enriched lives through the excitement and, at the same time, relaxation that squirrel, deer, bear, 'coon, 'possum and bird hunting brings. Without the cover offered and food supplied by forest trees to these animals and to game birds such as turkey, grouse and, along the forest edges, quail, we would miss a lot of living.

Remember how much trees influence our everyday life when Arbor Day rolls around this month. This is the day when we pay tribute to trees through planting them on school grounds, around the home and, on a larger scale, in eroding fields and cutover forest land.

Arbor Day for North Carolina falls on Friday following the 15th of March. Will your school observe it with an appropriate program? Your county agent or county forest ranger can help you plan one. Here is one way to help make your community more tree-conscious.

Wildlife Habitat IMPROVEMENT CONTEST

by Willie E. Royal

President, Sportsman's Wildlife Club

The Sportsman's Wildlife Club, of Guilford County, has realized that one of the major reasons for the shortage of wildlife is the lack of good food and cover. They decided in January 1954 to undertake a club project, with the help of the N. C. Wildlife Resources Commission and the U. S. Soil Conservation Service, to improve the food and cover habitat conditions in their county. The club, being very interested in the management and conservation of our wildlife, and firmly believing that the best possible way to increase and conserve our wildlife is through food and cover improvement, set up a contest based on the use by interested landowners of Guilford County of free seeds and plants furnished by the Wildlife Commission, consisting of bicolor lespedeza plants, sericea lespedeza seed, and a mixture of annual seeds suitable for food and cover.

The contest was planned for one year, with judging to take place early in the fall of 1954. The club received some one hundred applications for seeds and plants, with sixty of the applicants indicating a desire to be entered in the contest. The club wrote each applicant a letter explaining the use of the material and the rules of the contest. A bulletin on bicolor lespedeza was included with the letter. The rules for judging the entrants were based on the following: selection of planting site, cultivation, fertilization, care in planting, and survival.

Each entrant was advised that judging would take place in the fall of 1954, and that soon thereafter the Sportsman's Wildlife Club would honor all entrants with a dinner meeting and a program which would include the awarding of prizes to those entrants declared winners. The judging was to be done by a representative of the club, the Wildlife Commission, and the Soil Conservation Service. Judges selected to carry out the program were: John K. Davis, Guilford County Wildlife Protector; John W. Turpin, Soil Conservation Service, and Willie E. Royal, president of the wildlife club.

The judges finished their work early in November, and a dinner meeting, prepared and served by members of the club, was held on November 18. Included in the two hundred and fifty guests were members of the club and their wives, the entrants and their wives, and all the sporting goods dealers of Greensboro and vicinity. An excellent program was presented to the guests by Charles E. Hill, District Biologist, and Edward B. Bradley, Fisheries Investigator for the Wildlife Commission. Nine winners selected by the judges were awarded prizes of sporting goods, given to the club by local dealers, and each received a two year subscription to *Wildlife,* presented by the club. Winners were E. H. Young, James R. Shoffner, F. O. Whitaker, C. H. Clapp, R. K. Young, Charles L. Pritchett, H. W. Allred, E. E. Phipps, and W. H. Fox.

The members of the club were overwhelmed with the reception given to this contest and the dinner meeting that followed. They feel that projects of this type should be encouraged throughout the State. They feel that too often clubs such as theirs forget the basic approach to success by neglecting conservation and failing to work directly with landowners in helping them to help the sportsman. *To hunt on another man's land is a privilege . . . abuse of that privilege has but one net result: loss of a place to hunt.* If each of us would remember this and go out and visit with our farmer friends during the year and help them with their conservation problems, I feel certain that we will always have a place to hunt and to enjoy the outdoors. We should all become better versed in the problems of conservation.

The Sportsman's Wildlife Club appreciates the generous advice and help it received from members of the Wildlife Resources Commission and the local staff of the Soil Conservation Service, in making our project a huge success. Our thanks are extended to Donald Hankla, formerly district biologist for this area. His advice and help in starting this project was most helpful.

Paul C. Jones, Vice-President of the Sportsman's Wildlife Club (left) is shown discussing the winning bicolor plot planted by E. H. Young (center), with S. E. Coltrane, of the Haw River Soil Conservation District. Greensboro Daily News Photo by Dave Nicholson

STATE MUSEUM REOPENS

After two years with most of its exhibits in storage, the Museum has now moved back into its new building space in the Agricultural Building Annex.

The exhibits have been renovated and rebuilt to make a comprehensive presentation of the Natural History and Natural Resources of this State.

The large front Hall is used for the exhibit of live poisonous snakes, turtles, and fishes, along with some general and temporary exhibits. Following this is a graphic presentation of the place of the Planet Earth in relation to the Sun and other planets, reasons for day and night, months and seasons.

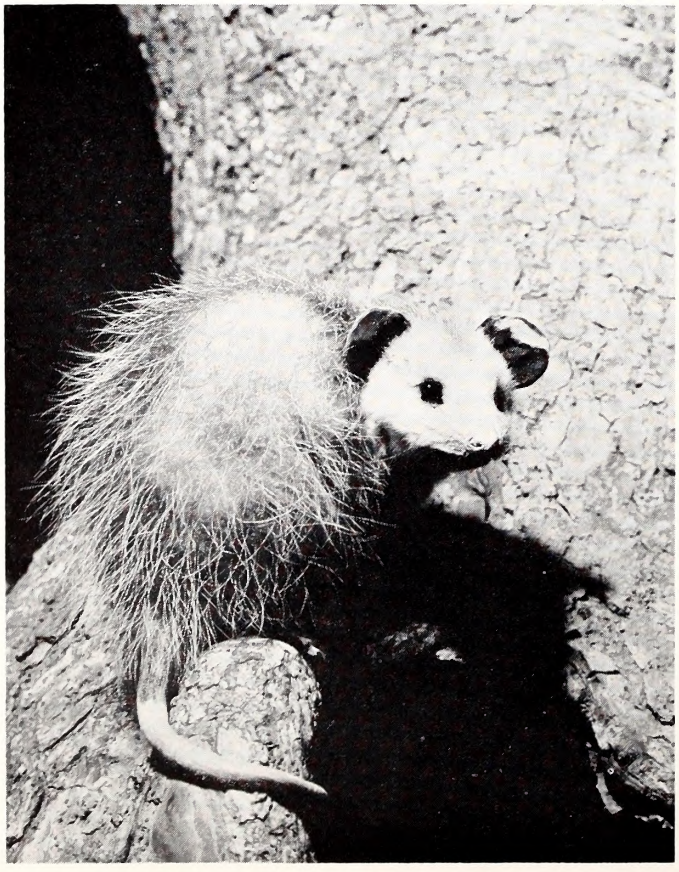
The balance of the first floor shows the geology and geography of North Carolina, the minerals and mineral resources, and the plant life, including forest trees.

The second floor has exhibits of animal life from the invertebrate forms through fishes, amphibians and reptiles. The mezzanine floor is devoted to the higher animal groups of birds and mammals.

The Museum is open from 9 until 5 on week days and from 1 to 5 on Sundays, Christmas Day being the only exception. There is no admission charge.

Life-like mounts demonstrate the ability of museum taxidermists to duplicate nature. The April issue of WILDLIFE will carry a feature article on the new State Museum.

Photo by Jim Lee



SUCKER

from page 15

is white and sweet. In midsummer the flesh may be soft, but in the early spring at the time of the spawning run it is of excellent quality. Unfortunately, the suckers are well supplied with small bones throughout the flesh which makes eating them something of a problem.

The sucker populations of our inland waters constitute a source of good food which is not generally utilized. They do not take a hook well. Nets are necessary to take any appreciable numbers. As the study of our inland waters goes on, and after we determine where abundant populations exist, provisions may be made for taking large numbers of them. In addition to increasing the food supply of our people, their removal may be expected to improve the habitat for the game species present.

The effect of suckers on game fish populations is a long debated subject. Early investigators found young suckers in the stomachs of trout, walleyes, and bass. They concluded that the suckers must be a desirable forage species. Stomach analyses to determine what the suckers had eaten showed them to be mainly insect feeders, and again it was concluded that they constituted a means of transforming unused small animal life into food for the game species.

Later on it occurred to some investigators to do more extensive stomach analyses at the time the eggs of the game fishes were available. Then a different story developed. It was shown that fish eggs are a preferred food of suckers as long as eggs are available. Reports began to appear, such as ". . . they are known to eat the spawn of more valuable fish," ". . . this species . . . also takes larger objects such as the eggs of other fish," and "By reducing the number of these fish in the lake an increase in walleyes, black bass, and other game fish might result, since there is good evidence that eggs of these valuable species are destroyed by the suckers." As a matter of maintaining good game fish populations, it now appears that large numbers of suckers are most undesirable.

And here is another important conservation thought for the fishermen of North Carolina. One well-known fish biologist says, "Suckers are the most easily handled of all our fishes under the usual methods of artificial production. They hatch about ninety-five percent under normal conditions and in ordinary ponds grow to a length of four inches or more the first summer. *It is predicted that they will eventually become one of the most important bait 'minnows' if, as appears certain, it becomes necessary as a conservation measure to forbid the taking of minnows from public waters for sale as bait.*" That was not written about North Carolina, but it might well have been. What do you think?

PROTECTOR OF THE MONTH

D. E. Barnes

Mr. D. E. Barnes is a lifelong native of Gates County, having been born there in 1894. When he was employed as a game protector in 1935, Mr. Barnes was assigned the territory which is bounded on the north by the Virginia line, on the west by the Chowan River, on the south by the Albemarle Sound, and on the east by the Great Dismal Swamp, this area being a favorite spot of many Tar Heel sportsmen.

Throughout the years, his sense of fair play and the sincerity with which he goes about his work have gained Mr. Barnes the respect of all with whom he comes in contact.

We take our hats off to a man who has given twenty years of untiring effort to the cause of wildlife conservation.

It's the Law!

Question: What is the open season on foxes?

Answer: That depends on the location. The general law provides that "foxes may be taken with dogs only, except during the open season, when they may be taken in any manner." The hunting regulations provide: "Foxes may be taken with guns when the season is open for any other game bird or animal, except that where county fox laws regulate the season, the local law shall prevail."

There are more local acts of legislation affecting foxes than any other species of bird, animal or fish. An examination of over 100 local fox laws enacted over the past 35 years indicates that the general fox law applies in only 37 counties. That is, in those 37 counties, foxes may be taken with guns when the season is open for any other game bird or game animal and may be chased with dogs during the remainder of the year. In 30 counties, foxes may be taken with guns or dogs any time during the year. In 28 counties, specific open seasons on foxes are established by local acts of legislation. In two counties, the county commissioners are authorized to fix fox seasons. In three counties, foxes may be taken only with dogs.

ENFORCEMENT RECORD FOR DECEMBER

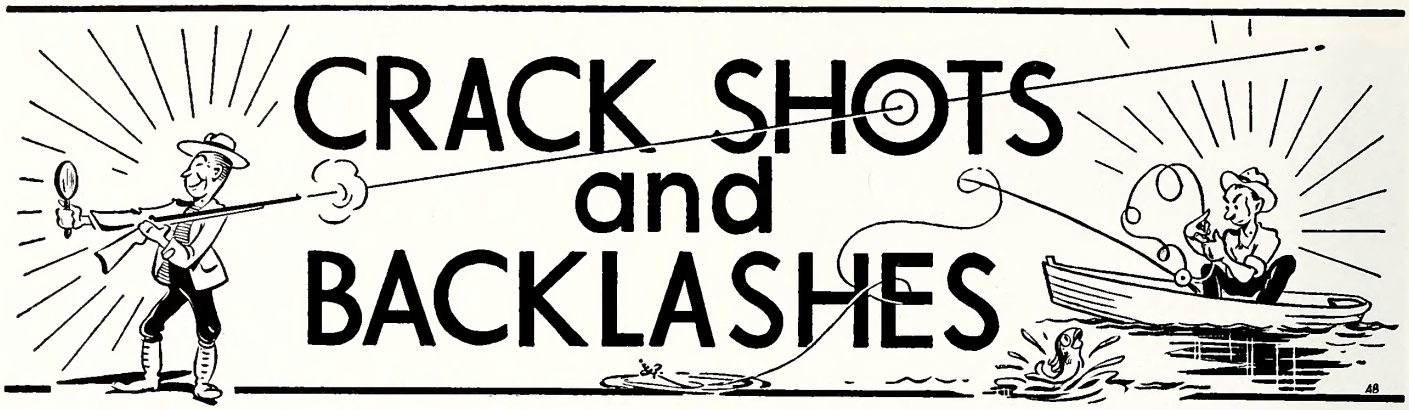
The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of December, 1954.

Persons checked		**28,519**
Total prosecutions		**589**
Total convictions		**491**
Convictions fined	**289**	
Convictions not fined	**202**	
Total fines collected		**$4,952.50**
Total costs collected		**3,804.31**

New Commission Officers

At the January meeting of the Wildlife Resources Commission in Raleigh, E. D. McGougan of Lumber Bridge was elected Chairman of the Commission, replacing R. Floyd Crouse of Sparta. Vice-Chairman Thurman Briggs of Lexington was elected to replace H. C. Kennett of Durham, and C. T. Wilson of Biltmore will serve as Secretary during 1955. Mr. McGougan, Secretary of the Commission since January 1953, has been a member of the Commission since 1949. Left to right, in the photograph, is Mr. Wilson, Mr. McGougan, and Mr. Briggs.

Photo by Jim Lee



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

"Dear Sir:

"WILDLIFE has been selected as one of the magazines which we wish to promote, to discuss favorably, and to show over our program, "The Younger Set," on the new educational television station, WUNC-TV, of the University of North Carolina, at Chapel Hill.

"We understand the grave restrictions of all copyrighted material, and we can assure you that we will give due credit to everyone all around.

"Thank you very much for your help and cooperation. We are especially anxious to use the January issue, but hope that you will grant permission for us to use your magazine at any time we have reason to believe it makes a special contribution to young tar heels.

Sincerely yours,
Jane B. Wilson"

We are deeply honored. Our congratulations go to WUNC-TV for putting on some fine programs.

—Ed.

"Dear Sir:

"My favorite pastime and recreation is hunting.

"I read and enjoy "Wildlife in North Carolina" each month. Also, I collect "Wildlife in North Carolina" magazines.

"While looking through the protected and unprotected birds and animals section in the 1954-1955 Hunting and Trapping regulations, I saw that vultures and their nest and eggs were listed unprotected and could be destroyed.

"Many people around here say that it is unlawful to kill buzzards and many say you may do so. I always thought they did no harm and were even helpful since they eat carrion.

"Will you please explain to me why they are listed as unprotected birds? Thanking you, I am

Yours very truly,
Bobby Umphlett"

Buzzards are, by North Carolina law, among the birds specifically listed as unprotected. Most people agree that they do more good than harm, and by tacit agreement rarely bother them.

"Dear Sir:

"Last week, we found a quantity of an unfamiliar substance on the beach at Long Beach, North Carolina. It weighs about eight ounces.

"It is a grayish, waxy material having a slight fishy odor. Its surface is wrinkled and slightly pitted. According to descriptions in the encyclopedia this could be Ambergris.

"Would appreciate any information you can give on this substance. Am interested in animal life and water-creatures and plants native to North Carolina. I read your column regularly in WILDLIFE magazine and obtain much useful information from it.

Thanks in advance,
Dale R. Powell"

This could be ambergris, but it is doubtful. Ambergris does not have a "mild" fishy odor. It is one of the strongest smelling substances in nature. Because of the lingering quality of its odor it was once highly prized as a base for perfume and sold for as much as $100 per ounce. It is now worthless because inexpensive perfume bases have been developed from coal tar derivatives.

"Dear Sir:

"I was interested in your article on Gar in the December issue. Only last week I foul hooked one in the tail while casting for bass. After about 30 minutes I got him up to the boat where I shot him. I had no way of weighing this critter but I believe he would have weighed between 15 and 20 pounds. He was five feet 6 inches long as measured with a boat paddle. Since then I have been told that the skin when dried and tacked on a pair of shoes over the soles will make the best wading shoes for trout fishing obtainable. I was told that they combine the best qualities of felt and hob-nails, and will practically never wear out. Do you think there could be any truth to this? Wish I had kept the big one and tried it out, however, I don't know how in the world I would have ever skinned it. If this would work it might help get some of the Gar out of our rivers.

Yours very truly,
Henry H. Rhyne"

We'd like to hear from anyone who tries this idea. A sudden demand for gar skins might help to remove these predatory fish from our waters.

"Dear Sir:

"I am enclosing $1.00 for which please extend my subscription for two more years. My subscription has not yet expired, but I don't want to wait and probably lose a copy. I note the article which you published with name withheld, concerning the shotgun and rifle. He seems to want a law passed to prohibit the use of the shotgun in squirrel hunting. I differ with him, for more reasons than one. I once confined my hunting to a 22 rifle for all game except bird hunting. A rabbit could not run too fast for me, and I would walk side by side with any one hunting squirrels. The size of his shotgun did not interfere with me, I would come in with as many or more squirrels than the other fellow. But as I got older my eyes begun to fail me, so that finally I was compelled to use bifocal glasses. So that caused me to strictly abandon the 22.

"I consider that there are many more in the same corner, and I do not think it would be honest to pass a law to cut out the shotgun. That would look like the folks with impaired eye sight was being kicked out for the younger class of sportsmen. That is not all, I have noticed for several years that nine out of every 10 use the 22 for unlawful hunting. They will get out in the back woods any time of the year and squirrel hunt till they are satisfied and if they don't get satisfied, they put a silencer on their 22 and come almost in your back yard, and on posted land, and when the squirrel is not to be found, the old DOMENECKER ROOSTER catches the d- and that is not all the 22 rifle is very dangerous, 90 per cent of accidents occur with the 22. A lot of stock is killed or badly hurt by wild and careless hunters. There were two accidents in this settlement this season, and some houses were struck by 22 bullets. I don't know who the writer was but he writes like he is very much worried about the death of a squirrel by the big old shotgun. I suppose a 22 causes them a smaller death. There could be a difference, he could cause a lot more deaths with less noise. I use a 410. I reckon that and the atom bomb would be about the same.

"This letter is not intended to pick up an argument with the fellow and his 22. I am not writing for the purpose of publication, but if you want to use it O.K.

Sincerely,
C. C. Maney"

WILDLIFE believes in giving both sides of any question. As to the use of shotguns or rifles for squirrel hunting, our laws very fairly leave the choice to the individual hunter.

"Dear Sir:

"May I begin by saying that I have taken your magazine for a number of years, and have found it very interesting. You and your staff are doing an excellent job emphasizing the need for the preservation of our wildlife. I am particularly interested in this, for there is nothing more beautiful than the wildlife of our country. While trying to explain this to friends, I have been asked how I could think them so beautiful and yet hunt and kill them. I am not interested or thrilled with the kill, however, but rather the mere chance to find a world of its own out in the peace of the countryside, and become a part of it.

"Rabbit hunting is my specialty, and I enjoy hearing a pack of beagles filling the fields and meadows with their "sweetest music this side of heaven" and training pups the "tricks of the trade." But I regret to say that I am afraid there will be very little enjoyment of this kind to take place in the near future! I mean by this that rabbits and other small game are rapidly decreasing. I read in your May issue that small game will reproduce itself if food and corn are provided. There seems to be no real alarm whatsoever for the disappearance of our small game. I notice that much work is conducted, however, for our larger game, which is all very well.

"I live in Alamance County. I have hunted in all parts of this county and several others, with the same sad story; an all day hunt, the find being from nothing to about only a dozen, usually nearer the former. What can we sportsmen do about this? Many of us have no land of our own in which to encourage the reproduction of game. I have many farmer friends, however, who might submit to my planting some of the state's food and cover crops. What other suggestions are available? Please inform me as to just what the state has thought about this problem, if anything. Do they realize the problem? I know that through the progress of man, our wildlife has suffered. We push them farther and farther away, paying little or no heed to their welfare.

"I sincerely hope that I shall never see the day when our small wildlife become extinct.

Yours very sincerely,
Ronald McCarter"

Raising minnows can be profitable, as E. L. Rozzelle of Charlotte has discovered. Mr. Rozzelle operates a very successful hatchery, according to his yearly report to the Fish Division.

"Dear Sirs:

"Last summer Hallie Daughtery of Kenansville and his boys Prentice and Samuel caught a fawn while working in the pulp woods Beaufort county. They put the little doe fawn in a pen until they could contact the wildlife authorities. That afternoon as they continued working the deer was taken from the pen. They came home and told me what had happened. I told them if they ever found any trace of it to let me or some other protector know. I heard no more about the deer until the 12th of December. At this time they told me they had found the deer and had brought it to me. They had asked questions and spent much time tracing the deer and finally found it in a pen in the vicinity of where it disappeared from. According to their investigation the deer had been to several houses in and out of the state before they got solid information as to where it could be found.

"It hasn't led to an arrest yet but through the cooperation and interest of Mr. Daughtery and his teenage boys we have one more young doe to supply our hunters in the vicinity of Holly Shelter Refuge area where she will be released or carried to some other area where stock is needed.

John O. Edwards
Wildlife Protector"

"Dear Sir:

"I have been taking "Wildlife in North Carolina," and think it is the best magazine buy in the world. I have enjoyed every single copy this past year.

"I recall that in your October issue you had an article on the gizzard shad, who is a vegetarian. But I have a method of catching them on a hook and line. One night late in October I was fishing on our pier on the Catawba River (back water) when I noticed a large school of shad swimming around in circles under the light. I tried minnows, red worms, without results, then I thought of loaf bread. I wet a piece of bread and worked it until it was firm, then using a small eagle claw hook (No. 8) without the lead, I placed on the hook a small piece of bread just enough to cover the point of the hook and dropped it into the water and before it could get out of sight a shad would hit it. I caught 39 measuring between 6 and 13 inches.

"Actually the shad puts up a better fight than any other fish of its size. To all fishermen who want fighting fish, I say, try shad at night with only a slice of loaf bread.

Sincerely yours,
Warren Shiver"

One of the Commission's fish biologists showed up recently with this tremendous bream. The biologist wants to know if the readers can guess the weight of the monster bluegill.

Photo by Jim Lee

"Dear Sirs:

"I have enjoyed "Wildlife In North Carolina" very much. Please find enclosed one dollar for my renewal subscription.

"I want to make a statement, if some one would do something about people letting their dogs run at large killing young game we would have more hunting and enjoyment. I would like very much to talk to someone about this condition and find out if we can't have something done about it.

Yours truly,
C. C. Venable"

"Dear Sir:

"I have been a subscriber to your magazine for several years. In glancing at the label on the January issue of your magazine I note that my subscription is about out. I am enclosing my check for $1 in payment of two years renewal.

"I am particularly concerned with the article in the January issue on page 12. I am from a tobacco raising country, southeast part of Robeson county and I think we should get this article to these people in the counties where these stack hazards exist. I don't know what you thing about it, but one thought that comes to me is that you might remind the parents of the children who are now in school. To do this it might be well to work through the school authorities and get them interested enough to assist you in submitting measures to the parents through the children looking to correcting the destruction of our song birds before another curing season begins. Or, if you would care to place an issue of the January magazine in the hands of each teacher in every class room of the tobacco curing counties, I would agree hereby to donate $10 to such a cause. The teacher could present the worthiness of the article on page 12 to the pupils and in addition the teacher could lend the magazine to one pupil each night to be presented to the parent and then bring the magazine back and then the teacher could give the magazine to another pupil the next day to carry home that night and so on until all parents have had the opportunity to read the article and take preventive measures. What do you think?

"I would like to have 6 of the backs of the January issue which is the "Fisherman's Prayer." I wonder if Washburn Printing Company here would have any extra ones on hand. I want these for framing purposes to be given to my fishermen friends. Whatever the cost is I shall be glad to pay.

Cordially,
Ben S. Oliver"

Darkening the sky as they return to the roost at sunset, this flock of birds is only one of many groups of robins that come from all directions to spend the night perched in the trees bordering a large open field.

ROBIN ROOST

Photo Short by Jim Lee

People aren't the only folks that hold conventions! Ever so often all the robins in a large area get together for the purpose of discussing their mutual problems and for general socializing. These conventions usually occur during the winter months, when the family has grown up and before another family is on the way. Meetings are held in the late afternoon and at night, while the robins are roosting in tree tops. This particular convention, which the writer attended as an uninvited guest, was held in a farm woodlot east of Graham, in Alamance County. Most of the invited guests were lodged in a thicket of young Virginia pines, although many stayed in the taller hardwoods surrounding the thicket.

Each morning great flocks of the birds leave the roosting site in search of food. Returning at sunset to their roost, flocks of as many as a thousand robins descend from the sky, each flock led by one bird who knows the way home. Frequently there is some disturbance which causes the entire population to take to the air, their wings beating with the roar of an express train. Once settled, the birds carry on quiet conversations. One muffled chirp multiplied by one hundred thousand birds equals a noise audible for a mile!

OTTERS — CITIZENS TO KNOW BETTER

THE AMERICAN OTTER IS A FIRST COUSIN TO THE MINK - SKUNK - WEASEL - BADGER - FISHER - MARTEN AND WOLVERINE - YET OTTERS AND SKUNKS LACK THE BLOODTHIRSTY FEROCITY OF THE OTHERS

INVETERATE TRAVELERS - OTTERS REGULARLY COVER CIRCUITS 20 MILES IN EXTENT INDIANS SAY THE OTTER IS SO RESTLESS HE WOULD NOT SETTLE DOWN EVEN IN HEAVEN

PERHAPS THE GREATEST POPULATION OF OTTERS IS IN THE COASTAL MARSHES AND ALONG THE EASTERN STREAMS - MATING TAKES PLACE IN FEBRUARY AND THE LITTER OF 3 OR 4 YOUNG ARE BORN IN BANK BURROWS AND STRANGELY ENOUGH - THEY MUST BE TAUGHT TO SWIM - THEIR STRONG TAILS AND WEBBED HIND FEET ARE NATURE'S ADAPTATIONS FOR A LIFE IN THE WATER

OTTERS ARE VERY INTELLIGENT AND MAKE EXCEPTIONALLY FINE PETS - THEY HAVE FEW OR NO NATURAL ENEMIES YET THEY CAN FIGHT SO FIERCELY THAT NO ANIMAL IS A MATCH FOR THEM IN THE WATER - THEIR DIET CONSISTS OF FISH - FROGS - SHELLFISH AND SOME TYPES OF AQUATIC INSECTS

SECRETIVE AND SHY - OTTERS OFTEN ARE SEEN WHEN THEY ARE PLAYING - THEY SLIDE DOWN CLAY BANKS AND FROLIC IN THE WATER BY THE HOUR - THE FUR IS EXTREMELY FINE AND DURABLE - THERE ARE NO LARGE CONCENTRATIONS OF THESE INTERESTING ANIMALS - THEY ARE NOT IN DANGER OF EXTINCTION IN THE NEAR FUTURE

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Wildlife

IN NORTH CAROLINA

TEN CENTS APRIL • 1955

April Memo

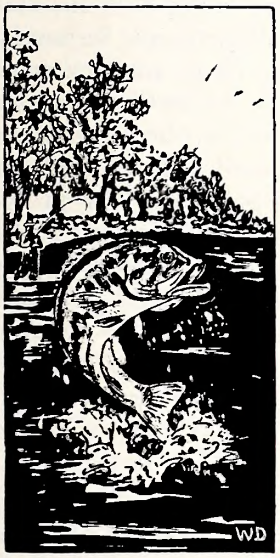
From a fisherman's calendar: "Plan return trip to Currituck Sound for bass. Remember last year—a sparkling April morning with a gentle southwest wind. Caught two whoppers before breakfast!"

Photo by Jack Dermid

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina



State of North Carolina

LUTHER H. HODGES
Governor

North Carolina Wildlife Resources Commission

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COVER

North Carolina has over 1,000 miles of public trout streams, and the outlook is for good fishing in 1955. The trout season opens April 5 and continues through August 31. Watercolor by Annie Dermid.

☆ ☆ ☆

EDITORIAL STAFF

Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Jim Lee ..... *Editorial Assistant*
Anne Taylor ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all materials published.

☆ ☆ ☆

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The STRIPED BASS

(Roccus saxatilis)

by J. H. CORNELL

Obituary 1965: **The single striped bass taken from the Roanoke River near Weldon during the 1965 spawning run is believed to be the last of this species in North Carolina. Fortunately, the small two-pounder was mounted for display at the State Museum and future generations will be able to see the valuable fish which provided their forefathers with millions of dollars worth of sport and food each season. At the museum, the bass will be placed beside a display of passenger pigeons.**

This could happen in North Carolina—and it may become a reality before 1965—unless the people of the State take the action necessary to save the striped bass's spawning grounds on the Roanoke River. Here is the story.

The striped bass is to the sport fisherman of the coast what the trout is to the angler of the mountains. As a worthy opponent on a fishing line it provides as much of a challenge and as much enjoyment to the fisherman as the brown trout which comes up from the depths of a dark hole to take a well presented fly. Both have the same inexplicable lapses in cooperation when even the best presented lure is entirely ignored. Both may be willing to take any lure offered and create those red-letter days which a fisherman will remember for the rest of his life.

The striped bass, or Rock as it is frequently known, once lived in our coastal rivers in tremendous numbers. It was the striped bass to which Captain John Smith referred in his oft-quoted writing of his early colony:

"The Basse is an excellent fish, both fresh & salte. . . . They are so large, the head of one will give a good eater a dinner, & for daintinesse of diet they excell the Marybones of Beefe. There are such multitudes that I have seen stopped in the river close adjoining to my house with a sande at one tide as many as will loade a ship of 100 tonnes."

Since that time, our so-called "civilization," with its attendant pollution of rivers and exploitation of resources, has reduced the striped bass to a small fraction of its former abundance. Even in the face of these obstacles it remains one of our most important commercial fishes as well as one of the best game fish to be found. The striped bass most commonly taken today average in weight from one to ten pounds. Individuals up to thirty pounds are not rare, and sixty-pound specimens are occasionally caught. Smith, in his "Fishes of North Carolina," reports several weighing 125 pounds being caught in a seine near Edenton, N. C., in 1891.

The Rock is a true bass and, along with his close relative the white bass, belongs to the family Serranidae. It has two separate dorsal fins. There are nine spines in the first dorsal and one spine followed by ten soft rays in the second. The anal fin has three spines and eleven or twelve rays. The small conical teeth are present on the jaws, vomer, paletines, and in two parallel patches on the base of the tongue. The fish is olive-green to almost black above, and paling to silver on the lower sides. In some waters the sides have a definite bronze luster. On each side are seven or eight prominent dark stripes which follow the scale rows. There are three or four of these stripes above the lateral line, always one on the lateral line, and three below it.

Actually there is little likelihood of ever confusing an adult striped bass with any other fish, although very young specimens are similar in appearance to both the white perch and the white bass. In the white perch, the dorsal fins are continuous. The white bass has a definitely arched back compared to the Rock, and the teeth on the base of its tongue are in a single patch.

Habitat

The original habitat of the striped bass was along the Atlantic Coast from the Gulf of St. Lawrence southward. Later, in minor numbers, it has been found on the west coast of Florida and in the Gulf of Mexico. Today it is most common from Massachusetts to North Carolina.

In 1879, and again in 1882, striped bass were transported to the Pacific Coast where they have become established and have become one of the most important game fishes there. It is a strictly coastal form, for it is rarely found more than a few miles offshore, and is most frequently taken in the brackish waters of coastal sounds and rivers. It is an anadromous species. Although the normal habitat is salt or brackish water, it ascends fresh water rivers to spawn, not infrequently going a hundred miles or more upstream from the coast to its preferred spawning grounds.

Originally, most of the major rivers along the Atlantic Coast supported a spawning population of striped bass. At the present time many of these rivers have been polluted to the extent that the fish can no longer use them, and the largest spawning area on the Atlantic Coast is found in Chesapeake Bay and its tributary rivers.

In the spring the spawning fish move up into these waters. The fish which will not spawn that year appear

to begin a coast-wise migration northward along the Atlantic Coast as they follow their preferred water temperatures. They return again in the fall months as the water cools, and the survivors winter in the Chesapeake Bay vicinity.

Tagging studies have shown that the North Carolina population of striped bass does not take part in this coast-wise migration but remains in the rivers, sounds and coastal waters of the State. The major spawning ground of the North Carolina population is in the Roanoke River in the rapids near Weldon, N. C. They collect in Albemarle Sound in early April and ascend the river to the rapids about the middle of the month. Most of the spawning population returns to salt water about the middle of May, and remains in the Pamlico Sound and adjacent coastal waters until the following spring. In cold weather they frequently move up into the mouths of rivers where the salinity is greatly reduced, but their extensive inland migrations are entirely for spawning purposes.

Life History

The striped bass may start out in life as an egg in the Roanoke River between Weldon and Roanoke Rapids. Rapids such as those located here appear to be an important aspect of suitable spawning grounds. When the eggs are first laid they are heavier than water, but the fast current keeps them agitated and suspended until they become "water hardened." Otherwise they would settle to the river bottom and be covered with mud which would shut off the necessary oxygen supply. After the eggs are water hardened, they have almost exactly the same specific gravity as water, and the mild current of the lower river is sufficient to keep them in suspension as they drift downstream.

The young hatch out after several hours, depending on water temperature, and as they approach Albemarle Sound. There is a tremendous mortality of eggs and fry from the time the eggs are laid until the young are large enough to swim well and hide from their enemies.

It is characteristic of all animals that the less parental care is provided for the young of any species, the greater is the reproductive potential. A thirty-pound female striped bass may produce as much as one and one-half million eggs, but probably a few hundred or less will actually survive and grow to spawning size.

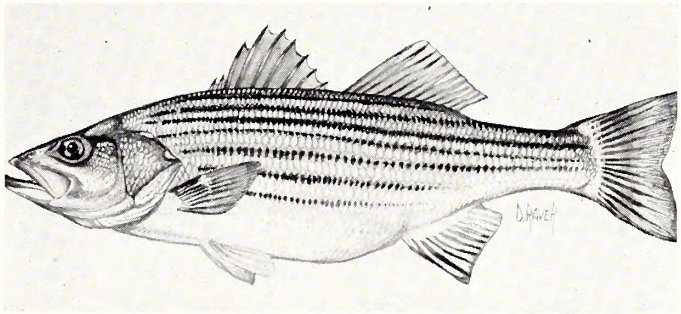
When the male is two years old and about a foot long, he is sufficiently mature to return to the Roanoke River on the spawning migration. A few females will be big enough to participate in the spawning run when they are three years old, but most of them do not spawn for the first time until their fourth year when they are about seventeen or eighteen inches long.

Importance

When the commercial and sport fishermen of North Carolina want more striped bass they must do two things. They must observe a minimum size limit of at least seventeen inches so that every female will have an opportunity to spawn at least once. No fish can be expected to maintain its numbers against constantly increasing exploitation unless adequate reproduction is assured.

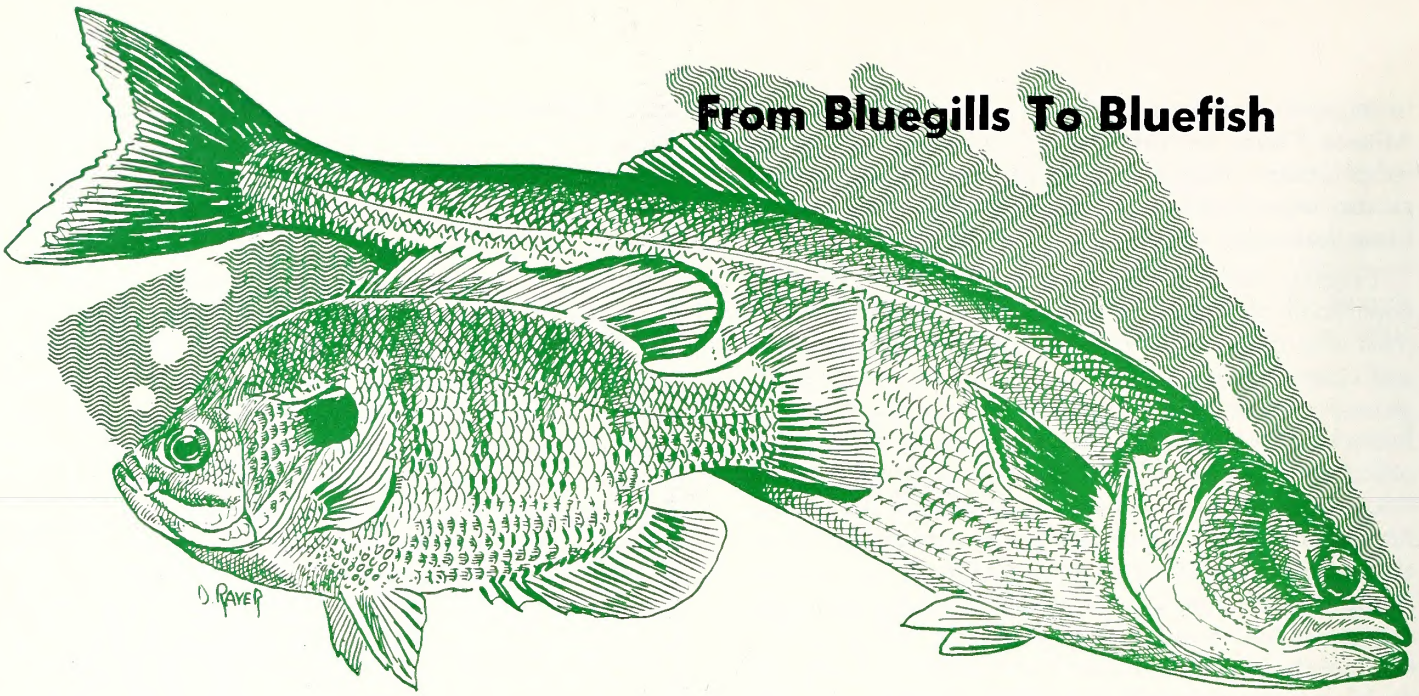
The other requirement is that a suitable habitat on the major spawning grounds in the Roanoke River must be preserved. The river is used at present for the disposal of mill and municipal wastes which have been shown to be toxic to the eggs and prevent their development. Existing dams above the spawning ground, which are devoted to power production, reduce the flow of the river at certain times so that the pollution load becomes of serious consequence. This habitat must be preserved during the spawning period so that the water quality is suitable for successful reproduction or the North

•——————See STRIPED BASS Page 17



Art by Duane Raver

The adult striped bass is one of the easiest of North Carolina's fish to identify. Below: It is choice food for the table and a champion fighter at the end of a line. This catch was made on the Roanoke River near Weldon. Photo by State News Bureau



For Both Salt and Fresh Water

THE *Most* VERSATILE FISHING TACKLE

by Duane Raver

Fisheries Investigator

Sketches by the Author

One of the best ways to start an argument is to sound off in favor of one specific type of fishing gear and then sit back and wait for the cascade of disagreements. Maybe that's exactly what will happen this time; but at the risk of lighting the fuse, here goes a few opinions on the most versatile fishing tackle available to the American angler.

The end point and ultimate goal of fishing usually is the hooking, playing, and landing of fish. This doesn't discount the wonderful elements of being out of doors and enjoying nature in general and the restful peace of the lake, pond, or river. But let's face it: most of us go out to catch fish. Whether we keep them and bring them home often is strictly secondary to the thrill of outwitting the critter in its native habitat. In order to do this as often as possible, the fisherman should have a wide range of attack methods at his disposal. At the same time these methods certainly must be sporting and enjoyable to use and thus maintain the ever-present elements of sportsmanship and fishing fun. What's the one type of fishing gear that comes closest to being the all-around equipment for nearly every species of fresh-water fish (and many salt water varieties too)? Spinning tackle.

Now, before you fly rodders and bait casters rise up in unison, let me hasten to add that neither of these forms can be entirely duplicated by the spinning rig, nor will they ever be replaced by the thread line outfit. The point being made is simply that the spinning outfit is the most versatile of any we know and can be instantly (well, almost) adapted to everything from brook trout and bluegills to bluefish. You will be in command of an outfit that will cast a number 10 wet fly (by using a transparent bubble), a 1/8-ounce spinner, right up to regular 5/8-ounce plug or even heavier with a spool of heavier line. In the bargain you will be ready to throw a hook bait with worms (using a split shot), a minnow and a bobber, or any other natural bait. This versatility can not be matched by any other single set of fishing tackle.

Like every other set of fishing gear, the spinning equipment must be "balanced" and in good running shape. The rod must be fairly long (a seven footer does nicely) and have plenty of action as well as adequate backbone. Generally, a rod that is too flexible does not handle lures of more than 1/2-ounce; and, conversely, the stick that is too stiff throws the tiny 1/8 to 1/4-ounce baits poorly. A rod marked "medium" seems a happy compromise. A good tubular glass spinning rod will display its tremendous versatility by taming bass or walleyes of better than five pounds and yet will come alive when a half-pound bluegill takes hold.

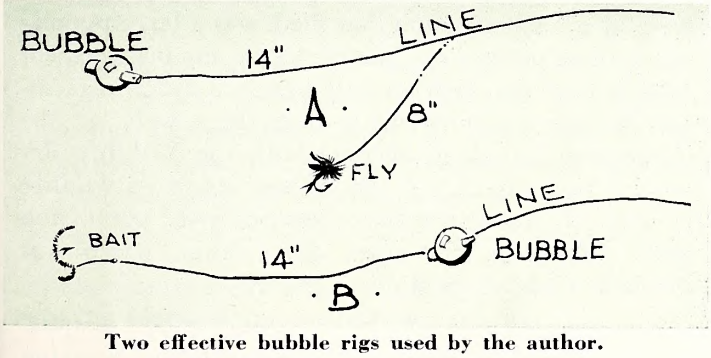
The spinning rods with a fixed or stationary reel seat seem to be gaining popularity over those with the sliding rings.

One feature of the spinning reel which makes it so versatile is the unique "clutch" feature which allows the fish to take line even though the angler continues to turn the reel handle. By setting this sensitive mechanism just under the breaking strength of the line, you automatically eliminate most of the broken lines caused by running fish. This means that much lighter lines are possible with the spinning gear. Since this firm, smooth, adjustable drag or clutch is so vital to the success of land fishing, check this feature on the reel you buy. The best I've found is on my new Pflueger "Pelican." This reel was well worth waiting for and combines the best features of a half dozen reels.

Not too long ago it was thought that any reel operating on the spinning principal of a non-revolving spool would cast effectively. Not so. The manner in which the line is laid on the reel determines the smoothness with which the line will peel off on long, quiet casts with the lightest baits. Again the Pflueger Pelican is outstanding with a "basket weave" line pattern. The Mitchell reel does this well too, in the class of reels slightly more expensive than the Pelican. Believe me, it's essential for smooth casting.

Versatility extends right on down to the monofilament line which seems the more popular of the two syles of lines in use. Light, yet strong, small diameter for fast sinking and less line drag in the water, undamaged by salt water, practically invisable and easily tied in any of several good knots.

Still haven't convinced you? Let's take fly fishing with the thread liner: wet flies, small streamers, and nymphs require either a split shot 14 inchs up the



Two effective bubble rigs used by the author.

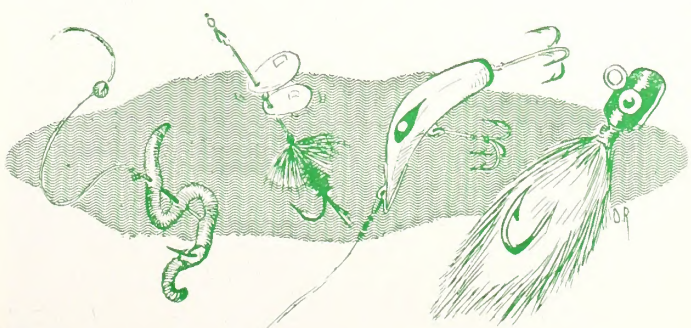
line or the use of the transparent bubble. The better, I believe, is the bubble and you rig it as shown in diagram A. For longer casts, fill the bubble with water; for less splash per cast, leave it empty. In fly fishing with the spinning outfit, a light, flexible rod tip is a distinct advantage. With it you can manipulate the fly in short, sharp jerks and detect gentle strikes. A tiny spinner ahead of your favorite fly will help take it down and add flash. Weighted streamers usually don't require the bubble, but they sink too rapidly for use in the average brushy pond. For lakes and rivers, they function much better. For the very popular, and somewhat over-rated popping bug, the spinning outfit comes out a poor second to the fly rod; so better keep the long rod around.

For natural baits, the spinning gear certainly has no equal. The most delicate baits can be cast many yards without being flipped off. Here again the bubble plays an important part. A rig that works well and which utilizes the bubble as a bobber, too, is pictured in diagram B. Using worms or other baits deep you will find the bubble or any bobber will hinder you from getting deep enough. Thus, only a split shot should be used. For minnows in depths down to two feet, the bubble is all right; deeper, no bubble and only one small shot. It's best to tie the bait hook directly to the monofilament line rather than using a snap-swivel. This is not true when using plugs. Any type of bait is usable on the spinning outfit; and the distance and ease with which the bait sails out will surprise you.

Plugs of almost any conceivable type and weight (up to a maximum of about ¾-ounce) cast beautifully and perform with maximum action on the thread line tackle. True, the light bait casting rig will throw the new small baits also, but never with the ease and freedom from backlashes that the spinning outfit will. And also, I think you will have more fun in landing your catch with the lighter, longer rod. Many anglers are learning that the smaller lures with the more minnow-like actions take big fish when the larger, more cumbersome baits fail. It seems, too, that your chances of hooking a fish with the smaller plugs are better for two primary reasons: first, more kinds and sizes of fish go for the little lures. For example, when you are fishing a spinning sized lure like the Lazy Ike, you're likely to catch bluegills, crappies, yellow perch, pickerel, or bass, depending on what species happen to be there. But if you are using a bass-sized bait, you are limited to bass or pickerel only. Too, the "big bait, big fish" theory is rapidly being disproved.

Fish your favorite trout stream with spinners or small streamers (the Eelet too) one week and cast for sea trout and bluefish the next—all with the same tackle. One change is advisable if you plan to use heavy sinkers in the surf, or are hoping for a fish from 5 pounds up: switch to an interchangeable spool with 8 or 10 pound test braided line and you're all set. I have trolled with my Pflueger Pelican loaded with 6 pound test line for hours and they're built to take it.

My advice is to try spinning tackle on all forms of angling and let the results be the deciding factors.



Almost any type of lure or live bait can be used with the versatile spinning rod.

THE *Uwharrie* DEER DRIVE

by Kenneth J. Chiavetta
Game Management Specialist

Ever wonder how many deer live on your favorite hunting grounds? Here is how Commission biologists take a census —also a report on the deer kill at Uwharrie during the past hunting season.

One of the first requirements of a sound game management program is knowing how *many* animals there are on the area being managed. Biologists are frequently requested to estimate game populations on areas ranging in size from a few acres to a district or even an entire state. An actual count of *all* the animals on an area could be very difficult, so, as a solution, counts are made on typical sample areas and population density figures are computed on the basis of so many acres per animal. This density figure is then applied to the entire area — just as a farmer often does not report the total production for his cornfield but reports instead the number of bushels per acre.

There are various methods of censusing wildlife, depending on the species being investigated and the cover conditions on the area. The recent Uwharrie deer drive illustrates some of the principles of game census.

From data collected during the census, the deer population of the Uwharrie Wildlife Management Area was estimated to be more than 2,000 head—an impressive increase over the 123 deer stocked in 1944-5.

Photo by Jack Dermid

The Uwharrie Cooperative Wildlife Management Area near Albemarle was stocked in 1944 and 1945 with 123 deer. Good game management practices, such as the establishment of permanent pastures and salt stands, protection from poachers and stray dogs, and certain timber management practices, have produced a large, healthy deer herd which is well distributed throughout the 13,000-acre area. In addition, a sizeable overflow herd has been built up outside the refuge in both Stanly and Montgomery counties.

Federal and State biologists and foresters — though their "guestimates" of the population levels varied— were in accord in stating that there was a large population of deer on the area. Deer stocking and management records had been kept from the start in order to facilitate finding out how many deer there were on the management area, in keeping with the Wildlife Resources Commission's policy of evaluating its wildlife program. It was important to determine the population level *before* the first open deer season, which was November 15-27, 1954.

The question was *which* technique was best adapted to give a population estimate for Uwharrie. Walking cruise counts and aerial surveys were ruled out because of the brushy cover. Ground conditions likewise ruled out deer track and pellet-group counts; so an old technique developed during CCC days, the deer drive, was selected. During visibility checks made in the summer and early fall, it was determined that approximately 60 men were necessary to make this count a success. This meant that this would have to be a cooperative endeavor. In addition to Game and Law Enforcement personnel of the N. C. Wildlife Resources Commission, approximately 30 students who were doing wildlife work at N. C. State College volunteered. The accompanying diagram should serve to demonstrate the details of a typical deer drive and show the relative positions of *counters* and *drivers.*

Sketch by Annie Dermid

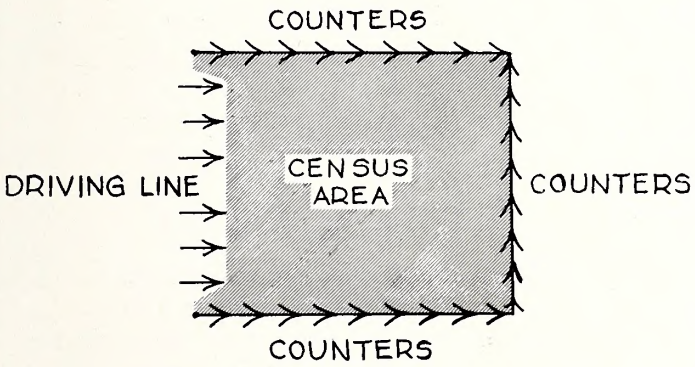


Diagram of a deer drive: Before the count, the drivers are lined up along the drive line and the *counters* are lined up around the other three sides. Each man is placed so that he can see his neigbors on each side of him. However, each counter counts only the deer passing between him and his neighbor in the direction indicated by the arrows. The drivers proceed across the census area and count only the deer that break back through the drive line.

The results of the deer census made on October 30, 1954 at Uwharrie are summarized below:

Bucks	*Does*	*Fawns*	*Unidentified Deer*	*Total*
27	75	12	11	125

Since 125 deer were seen on the 714-acre sample area, the indicated deer density was 5.7 acres per deer or 17 deer per hundred acres. *This means that there were more than 2,000 deer on the management area alone—a considerable increase from the original 123 stocked in 1944 and 1945.* To this, of course, should be added at least as many more on the outside of the management area.

It is interesting to note that the sex ratio of 36 bucks for each 100 does and the fawn ratio of 16 fawns for each 100 adult does are almost identical with pre-seasonal sex and age ratios obtained in the early fall. This strengthens our confidence in each count, but the sex ratio is particularly significant: here on an unhunted area three doe deer were seen for every buck. Observations of four or five doe deer per buck on areas subjected to several years hunting may therefore be taken to indicate that hunting had not seriously changed the sex ratio from "normal," which, of course, raises another question for future research: just how much hunting does it take to seriously deplete the ratio of legal bucks?

Later it was possible to check this estimate of the deer population against estimates derived from the deer kill figures. The 13,000 acres were opened to hunting and a daily quota of 200* hunters was set. The daily hunting pressure and kill were as follows:

Nov.	15	16	17	18	19	20	22	23	24	25	26	27	Total
Hunters	203*	119	164	203	205	201	201	205	153	204	137	204	2199
Deer Kill	36	20	15	19	21	23	9	3	7	10	3	9	175

*Maximum allowable overrun to accommodate the last car before filling the quota was five; thus up to 205 could be admitted in a 200 quota.

A rule of thumb developed in the western United States, which game specialists have used for some time, is that there are usually at least 10 deer left for each buck killed during buck seasons. Following this reasoning, the Uwharrie deer population at the time of the deer drive was at least eleven times the seasonal kill. By simple arithmetic: 11 times 175 = 1,925 deer. On the 13,000 acres, this would amount to 6.8 acres per deer or 15 deer per 100 acres. This figure comes pretty close to the 17 deer per 100 acres derived from the deer drive.

Naturally, not all of the deer are bucks and figuring that each doe will produce on the average of 1.5 fawns next summer there will be . . . but that is another deer story.

Detailed plans for the deer drive were outlined to the 60 participants around an early morning campfire. Besides Game and Wildlife Protection personnel, about 30 State College wildlife students helped in the census.

Photo by Ken Chiavetta

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Rockfish Run Starts Early

On the first day of spring the first rockfish of the season was taken in a net near the Weldon spawning grounds. Heavier rainfall this spring made possible high water flows through Kerr Dam, and early warm temperatures indicate an earlier run. The Engineering Division of the Wildlife Resources Commission has completed operations on construction of a new water aeration plant which includes a 750-gallon tank contained within the rockfish hatchery building at Weldon. The hatchery, which produced over 22,000,000 rockfish fry last spring, is ready for 1955 operations.

* * * *

Trout Season Opens April 5 – Non-residents Need $2.00 Trout License

On April 5 the general season on mountain trout fishing opens, with all of the streams designated as public mountain trout fishing streams having been stocked with initial placements of fish ranging from 7 to 12 inches in length. Recent law enacted by the 1955 Legislature will require non-residents to purchase special trout licenses costing $2.10. Resident trout fishermen will pay $1.10 for this license, required on all designated mountain trout waters.

* * * *

Short Term Fishing Permits For Non-resident Anglers

Recent legislation by the 1955 Legislature has restored the 1-day and 5-day fishing permits to non-resident anglers. The new law applies to all public waters in the state. Prices are the same as before: $1.10 for a 1-day permit and $2.60 for a 5-day permit.

* * * *

Public Fishing Access Area Program Progressing

Work continues on the Wildlife Commission's program of setting up free public fishing access areas on important public fishing waters throughout the state. Twenty-seven areas have been completed or are in the process of development. The May issue of WILDLIFE will feature an article showing exact locations of these areas coordinated with official state highway maps.

* * * *

Public Hearings Planned To Formulate 1955-56 Hunting Rules

During late May and early June the Wildlife Resources Commission will hold its customary public hearings to set forthcoming hunting regulations. Dates will be announced in the May issue of WILDLIFE.

PHOTO FEATURE

By Jim Lee

The New STATE MUSEUM

The barn owl that graces the top of this page has seen a lot of things in his time, but never before has he seen such crowds as are now passing the case from which he stares with glassy eyes. From his pedestal on the mezzanine floor of the new State Museum building, he will see this year more than 200,000 people who have come to look at the exhibits in the Museum.

The visitors — school children, college students, tourists, and just plain visitors—will see a great deal more besides the stuffed owl. It's become a tradition with thousands of North Carolinians to visit the Museum when in Raleigh, and this custom extends back to before the War Between the States. In 1851, the Legislature authorized the Commissioner of Agriculture to keep a museum or collection to illustrate the agricultural and other natural resources of the State. Since that time millions of visitors have found at the Museum exhibits and collections which now include examples of all the important animals and the important mineral resources of North Carolina. The rocks and minerals are among the Museum's most valued treasures, and this is not surprising since the Museum owes its original beginning to the collection of minerals gathered by Denison Olmstead after he was appointed the first State Geologist in 1823. His collections, and those of other geologists, became the nucleus of the Museum.

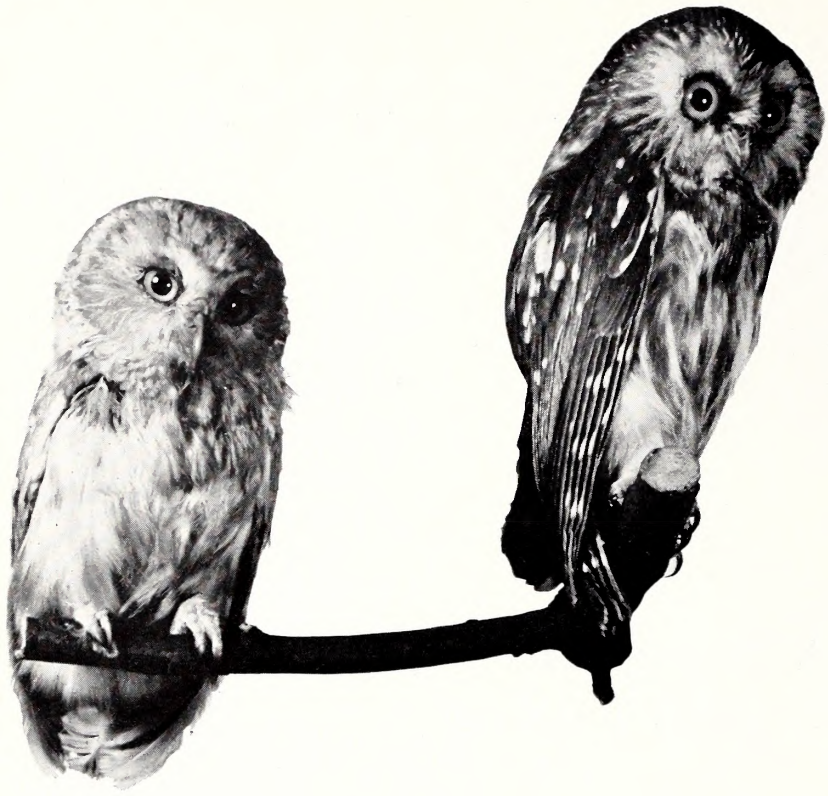
The exhibits of the Museum were first housed in the Capitol Building. Later they were transferred to rented quarters, and finally, in 1890, they were moved to a building that then stood at the present location of the Agriculture Building. The exhibits are still located in the same block, but some changes have been made. In the spring of 1955, the doors were opened to a new building which has been constructed to house the Museum.

The new building, modern and well-lighted, has three floors of exhibits and an additional floor for storage and preparation. The new exhibit halls are reached through the lobby of the old building, which still contains the famous collection of live snakes and other live animals, along with new facilities for presenting changing exhibits. In the new section, exhibits on astronomy, geology, and plant life are displayed on the first floor. On the second floor, parts of which extend to the mezzanine above, are located the lower forms of animal life, including fish, amphibians, and reptiles. On the mezzanine floor, where balconies bring the visitor close to the large mounted fish and whale skeletons suspended from the ceiling, are featured the birds and mammals. Indian artifacts are also located on the mezzanine.

Largest of the specimens in the Museum is the skeleton of a whale, which measures 55 feet in length. One of the smallest items on display is a half-carat diamond, from Burke County, which is only one-eighth of an inch in diameter. Value of the Museum's exhibits now exceeds $200,000. Most of the specimens have been collected by Museum personnel or donated to the State by friends of the Museum.

The Museum has grown tremendously since the first mineral collection 132 years ago. With the opening of the new building, the Museum can look forward to renewed interest and appreciation in the place where North Carolina looks at itself.

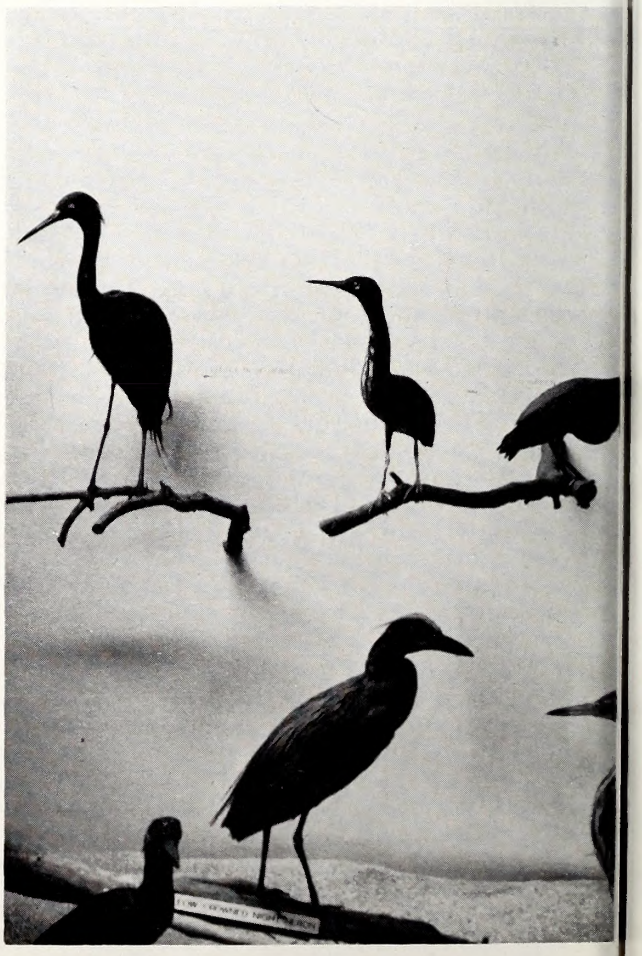
The Museum staff includes Harry T. Davis, director; Frank Meacham, zoologist; Julian Johnson, preparator, and Miss Mary Knight, secretary.



Mounted snakes are among the most fascinating exhibits f
who come in classes to the Museum from schools through

One of the important duties of the Museum's staff is the cataloging of new material. Frank Meacham, zoologist, is shown recording the aquisition of a bobcat skin.

Teaching natural history through demonstration, the M
exhibits of animals are grouped according to family
ships, as shown here in a display of mounted herons.



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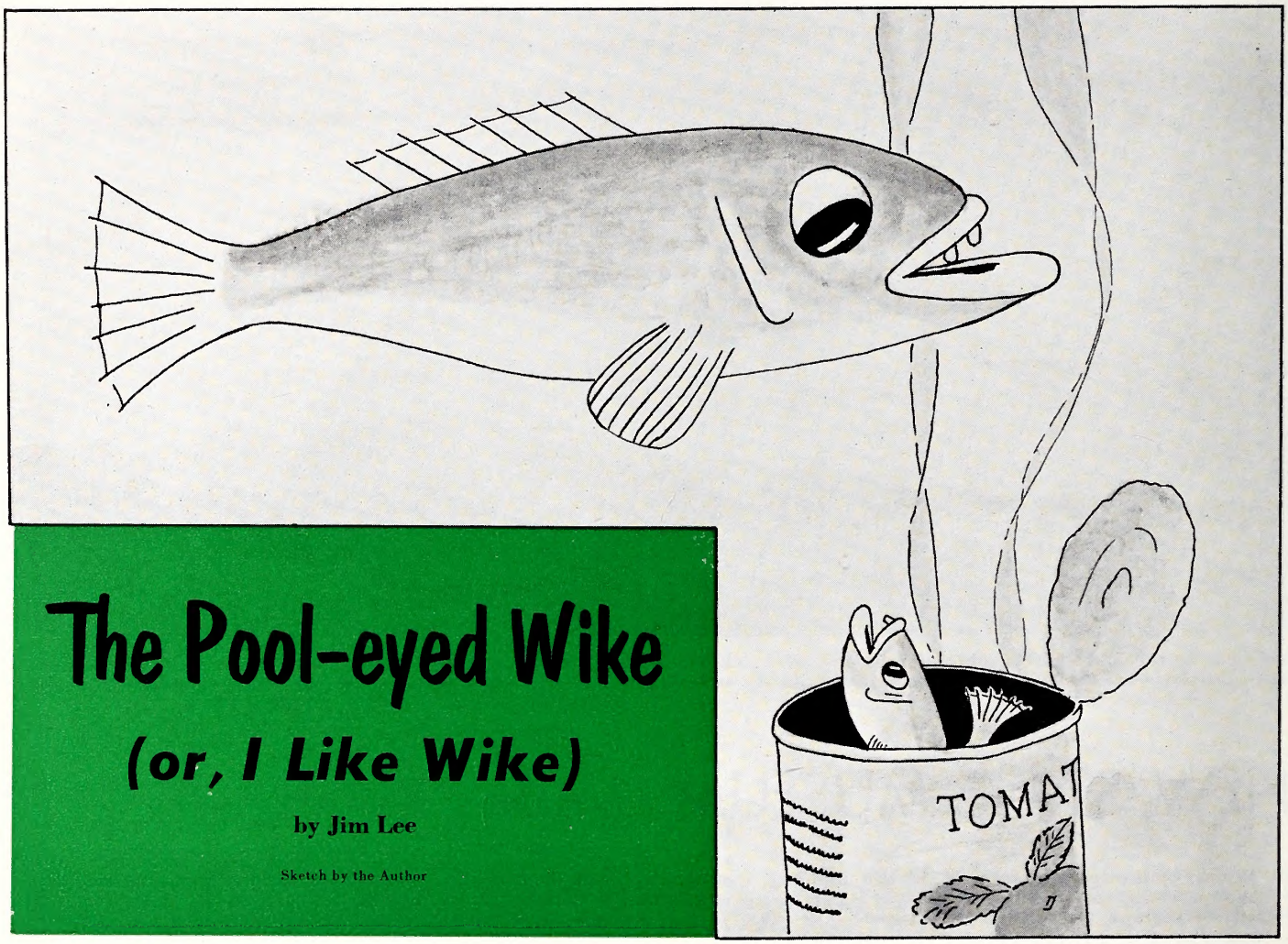
In the lobby of the Museum are kept live exhibits of fish, turtles, and snakes. This bass has lived for more than two years in a large tank. Other live animals, such as some of the large rattlesnakes, have lived in captivity at the Museum for as long as twenty years.

E NEW STATE MUSEUM (CONTINUED)

Typical of the spacious halls of the new building, the Fish Hall contains examples of the commercially important food fish as well as the sport fish of our coastal waters. Suspended from the ceiling, the fish can be viewed from the balcony as well as from below.



The Pool-eyed Wike

(or, I Like Wike)

by Jim Lee

Sketch by the Author

If you are ever so lucky as to be on one end of a light tackle outfit and have a pool-eyed wike on the other end, you are in for an unforgettable experience. If you were born under a lucky star, have always paid your taxes, and have long since stopped beating your wife, you might even land the battling monster. Bursting with pride, and hugging your trophy close to your sweat-stained shirt, you will lug the critter home for all the neighbors to see. Their gasps of admiration will be a fitting tribute to your angling skill. Curious people will come from miles around to see your wike. The writer would like to see it too. He really would.

Although many of the habits of the pool-eyed wike remain a mystery to scientists, some facts have been uncovered. The favorite food of the pool-eyed wike is the pool-eyed wike. Actually, the wike is not cannabalistic; he just doesn't know any better. For fishermen who are not able to obtain wike for bait, almost any other bait will work equally well. Small bits of T-bone steak, a silver spoon, or perhaps a burned-out radio tube may prove successful. Some wike fishermen swear by water moccasins, other wike fishermen swear at water moccasins, and nearly all other fishermen swear at wike fishermen.

The wike stands alone in the piscatorial world. His nearest relative, the pot-bellied stover, has been extinct for many years, victim of the voracious appetite of the wike. It's just as well that the stover did become extinct, since as fish go he wasn't worth a toot anyway. Of the pot-bellied stover Pliny, the Roman naturalist said: "œ&!", which roughly translated means that Pliny was pretty much upset. A more literal translation will not be published in a family magazine.

Food Habits

Rapidly adjusting himself to the lack of the stover as a staple item in his diet, the wike now centers his attention on the larger game fish, when he is not chasing little wike. The wike does not chase wike of the opposite sex. This interesting sidelight on the wike's baffling nature will be explained later. Because of the fierce reputation of the wike, game fish bolt and run whenever a wike draws near. In order to overcome this disadvantage, the wike lies in wait near a skillful angler. When the fisherman hooks a large fish, the wike then moves in and steals the angler's catch. This accounts for a great many of the big ones that get away. At least, that's the story that the writer tells.

Size

Pool-eyed wike vary in size from small to large, with individual specimens to be found in all size classes. Smaller wike are less common, since they are easier

for the larger wike to eat. The maximum size attained by the wike is not known to science. In view of some of the tremendous game fish reported taken by the wike from sportsmen, he must reach amazing dimensions. Lee[1] reports that a twenty-pound bass was lost by him to a wike, so that scientists must conclude that either the wike is capable of devouring a twenty-pound bass, or that Lee is a liar of the grandest proportions. In the absence of reports to the contrary, it must be assumed that Lee was telling the truth.

Identification

The wike is a uniform gray on the back and along the sides, shading into white on the belly. Lacking anal fins, the wike has two pelvic fins and only one dorsal fin, which is spiny. The eyes, which are large, expressive, and seldom bloodshot, give rise to the common name that is applied to this species. It has been alleged by some that the common name is a corruption of the mutterings of a drunken old fisherman who was complaining about his spouse, but this is not confirmed. The scientific name was supplied by an early American naturalist, whose name, unfortunately, has never been revealed. The scientific name, *Ohmi achinhead,* is thought to have been ascribed after an all-night poker game.

Habitat

Little is known about the range of the pool-eyed wike. Isaac Walton made reference to fish lost by anglers after they had been hooked, but it is suspected that the wike was not to blame in these cases. Due to the particular life history of the wike, discussed below, the fish is generally restricted within his range to waters containing various sorts of domestic and industrial wastes. The writer hopes that within the next few years a study will be undertaken to determine the exact range of the pool-eye, but would just as soon not undertake the study himself.

Life History

Unlike other fish, which either bear their young alive or else lay eggs, the wike arises by means of spontaneous generation, nourished on the vapors emitted by discarded boots and rusty tin cans lying within the stream beds of many of our fishing waters. Relieved of the responsibility of rearing their young, the adult wike thus may devote their full time to the pursuit of pleasure.

Management

The wike is among the most difficult of fish to manage. Although this fact is of little significance to the wike, to the sportsmen who are devoted to the challenging sport of seeking the wike it is a matter of utmost concern. Where only a few years ago tons of cans and other wastes were poured into our streams in order to encourage the generation of more wike, many items that were formerly packaged in cans now come to the householder in paper cartons, thus eliminating this important source of wike breeding stock. Unless an aroused America soon comes to the realization that the precious wike is in mortal danger, he may disappear from our waters.

Finally, a word about the preparation of pool-eyed wike for the table. After thoroughly cleaning the fish, which may be readily accomplished with the aid of a hacksaw and a blowtorch, the fish should be marinated in a solution of clear kerosene for two days. At the end of the second day, remove the wike from the kerosene and add to the kerosene a liberal quantity of gasoline. Use this mixture for cooking the wike. The fish may be boiled, baked, or fried. It doesn't matter; it won't be fit to eat anyway.

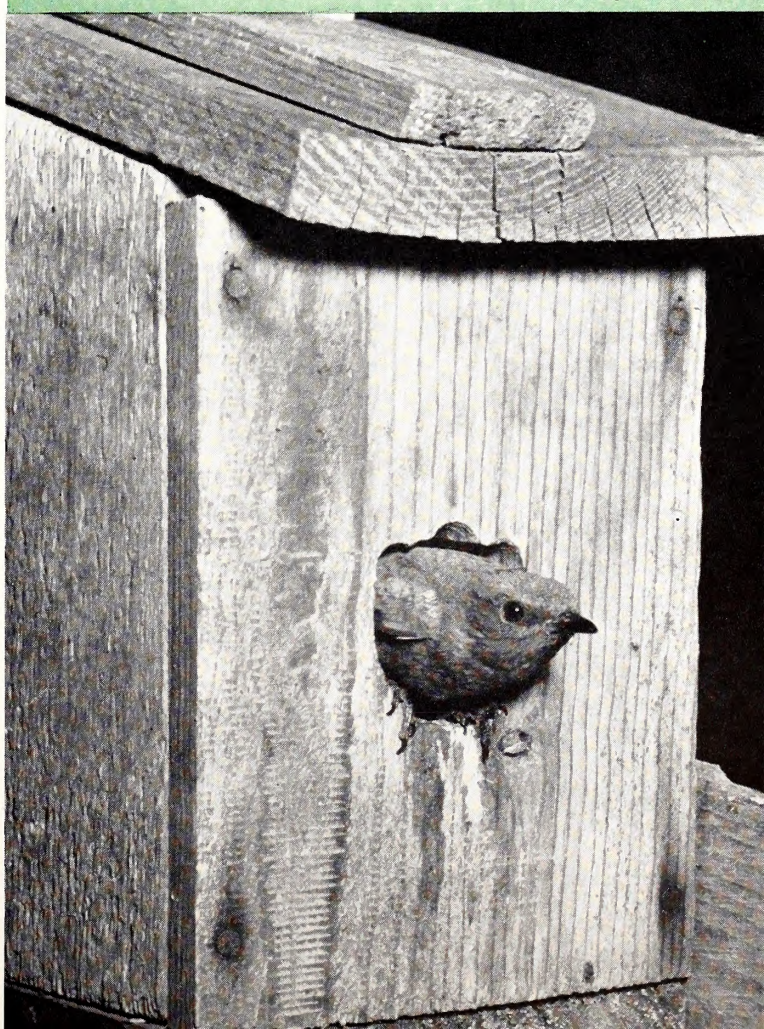
1. Lee, Jim: The Piscatorial Prelude to World Chaos. Jour. Am. Soc. Prevaricators and Horn-tooters. Mar. 1953 p. 8.

Bluebirds
MAKE GOOD NEIGHBORS

The nesting season is just beginning for most songbirds, and it is not too late to erect birdhouses. A few extra houses might offset losses to the bluebird population by tobacco barns (see WILDLIFE, January 1955). Besides being cheerful neighbors, bluebirds help control garden insect pests.

A few other Tar Heel birds will nest in boxes, too. If you want to build a few, write the Education Division, Wildlife Resources Commission, Box 2919, Raleigh, for a free booklet giving plans and specifications. The booklet, "Bird Furniture," also gives tips for making feeding stations and bird baths.

Photo by Jack Dermid



A revision of the North American Fish Policy which was adopted by the Society in 1938 and published in the Transactions of the American Fisheries Society, Vol. 68 (1938), pp. 40-51. Adopted by the Society September, 1954.

To strengthen the purposes and to achieve the objectives of the American Fisheries Society, the following policy is adopted:

I. State, National, and International Relations. The individual States should be responsible for the administration and management of the fisheries within their respective boundaries and should perform, by agreements, these functions for interstate fisheries.

The Federal Governments, in addition to fulfilling their responsibilities for the administration of laws pertaining to national, territorial, and international fisheries, should collect and disseminate information on fisheries and should serve in an advisory capacity to the States and Provinces on fishery problems.

NORTH AMERICAN

FISH POLICY

This article merits serious consideration. It contains the basic philosophy of the leaders of the American Fisheries Society for the development of a sound fish management program.

Where two or more nations share a fishery, rational management should be secured by means of a multilateral approach and international agreement. In promulgating these treaties the signatory nations should take into account the research and conservation measures undertaken by the component States and Provinces.

II. Administration of Fisheries. Fisheries should be administered on a nonpolitical basis and by individuals trained and experienced in the scientific management of fisheries. Biological facts should receive primary consideration in the utilization of fish stocks. The agency charged with the administration of the fisheries should be responsible for establishing needed regulations.

Public access to sport fisheries is of paramount importance. Present public ownership of water frontage should be jealously guarded and should be expanded at every opportunity.

Conflicts between sport and commercial fisheries should be settled on the pertinent facts in each case. In many instances waters will support both types of fisheries with mutual benefit. Where actual competition exists to the proven detriment of either fishery, an objective economic appraisal should form the basis for the determination of proper regulations.

III. Research. The success of any fish-management policy, in private or in public waters, is in proportion to its basis on factual information. This is a clear demonstration of the prior requirement for research in all phases of fish management.

The necessary research, conducted by trained personnel, must range from detailed physiological studies on individual fishes to broad-scale studies of the relationships of populations and environmental conditions.

Constructive programs of research should be developed by universities and by administrative units—State, Provincial, or Federal—to make the most advantageous use of available facilities and personnel. The comprehensive programs made possible through such coordination of resources should encompass the necessary fundamental research in all related fields and the practical problems arising from the application of research finding.

IV. Management. Regulatory laws, stocking, and habitat improvement are the presently recognized tools for management of most sport and commercial fisheries.

Laws for regulation of the catch should be based upon proved need, limited to those necessary for orderly management of fish stocks, and stated as simply as possible. The harvestable surplus of fish should be removed at the most desirable size and in the best condition for sport and food.

Food, game, and forage fishes reared at public expense should be stocked only for public benefit; private fish culture should be encouraged to supply privately owned waters. Only fish free of objectionable diseases and parasites should be used for stocking. Periodic replanting is desirable of lakes that winterkill infrequently or of waters which are occasionally depleted by pollution; otherwise the stocking of the young of any species in waters having adequate spawning conditions is considered of doubtful value. The introduction of exotic species is proper where adequate biological investigation has demonstrated the need and the suitability of the environment including the possible effects on contiguous waters.

Planting catchable fish in waters where reproduction is lacking and where environment deficiencies cannot be remedied, is recommended if those who benefit pay the cost of such stocking. Elsewhere public agencies

should limit the harvest to the extent that good sport will be maintained by natural spawning. In heavily used waters, fishing for game species must be regarded as a source of recreation, not meat. Private fish culture should be encouraged to provide fish for the table and for those who must have, and will pay for, a full creel.

Habitat improvement includes creation of new fishing waters, control of pollution including soil erosion, and provision of additional shelter, food, and spawning facilities for fish. Such work should be preceded by a physical and biological survey to determine the factors limiting fish production and the remedies to be applied. The watershed approach is recognized as logical and most efficient.

V. Multiple Use of Waters. Fishery resources are too important to be disregarded in any water-development project. Throughout most of North America the scarcity of water precludes any single-purpose development. Any plan to use water for power, irrigation, navigation, mining or to carry waste products should include maintenance of the fisheries as a co-equal objective and become part of the project cost.

Wherever an agency plans any development that will impair either the quantity or the quality of water available for fish life, mitigation of fish losses should be the financial responsibility of the sponsoring agency. Local projects are State or Provincial responsibilities. Interstate problems should be solved by interstate compacts.

The Federal agencies concerned with fisheries and public health should be responsible for conducting research in cooperation with the States and Provinces on the effects of pollution and other water uses and on methods for preventing loss of fish. State and Provincial agencies should conduct research on purely local problems.

VI. Adoption of Uniform Common and Scientific Names of Fishes. The standing committee of the Society should accelerate its efforts to have the most appropriate common names accepted by fishery administrators and the general public.

VII. Education and Publicity. Progress in management of fisheries is dependent upon public understanding and acceptance of current and proposed programs. Every available means should be employed to disseminate factual information in a form that will be readily understood and accepted.

North American Fish Policy Committee

Richard S. Croker
John F. DeQuine
W. J. K. Harkness
A. V. Tunison
Albert S. Hazzard, Chairman

STRIPED BASS

from page 5

Many fishermen catch striped bass by holding dip nets underwater as they drift downstream. When a fish strikes the net, it is lifted into the boat.

Carolina population of striped bass faces future extinction.

The striped bass resource is conservatively estimated to have a cash value of between one and two million dollars each year to the people of the State. This does not take into account the recreational benefits enjoyed by our sportsmen, to which no cash value can be assigned. So long as the power reservoirs are permitted to be operated for maximum efficiency, with no consideration for the striped bass population, river flows will be periodically reduced during the spawning season to such an extent that the fish cannot use the spawning ground. The pollution can be, and is being, reduced. The major concern at this time is whether or not a relatively few dollars worth of potential electricity shall be lost in exchange for maintaining minimum river flows adequate to guarantee the future of the striped bass fishery, or whether the absolute maximum amount of power shall be produced and this entire resource lost to the people of the State. The problem is just that simple, and there are no alternatives.

About 10,000 acres of the 50,000-acre Mattamuskeet National Wildlife Refuge have always been open to public shooting and each year hunters normally bag from 3,500 to 5,000 Canada geese and a like number of ducks from blinds managed by the North Carolina Wildlife Resources Commission.

Ten Years of Progress

CONSERVATION IN 4-H CLUBS

Our Future Sportsmen by Bill Hamnett

Youth Activity in North Carolina has been much more than just playing and growing up. The learning process has been functioning as well because the interest among boys and girls in wildlife conservation has grown by leaps and bounds. As an example of this increased interest let us see what our 4-H Club organization in North Carolina has accomplished through the youth enrolled in that program.

Conservation has been an important phase of the 4-H program in North Carolina since its inception 30 years ago. As conservation became more defined and classified we see the beginning of interest in soil and water, forestry, wildlife and nature appreciation.

It is the wildlife conservation activities that sportsmen should be interested in. For the ten year period from 1945 to 1954 the following figures will indicate how the individual participation and statewide interest has increased among these young people. In 1945, less than 1,000 boys and girls in but 36 counties participated in wildlife conservation activities, but in 1954, 5,143 boys and girls in 100 counties participated.

What did they do? Well, at first most of the activity was leaf collection and tree identification, insect collection, rock collection, identification of birds and mammals, and things similar in scope. Over the years the project became more precise in its scope and, as it has for several years, now stress wildlife conservation activities. Today, the 4-H boy and girl taking this project does this type of work. Habitat improvement — planting border strips, fence rows, and hedge rows, establishing food patches, disking, and leaving unharvested strips of small grain close to good cover; fur trapping; farm pond management and production; building houses for birds and mammals, also feeders; photographing wildlife and wildlife homes; keeping pets at home during the breeding season of game

PROTECTOR OF THE MONTH

Cecil Lindsay

Mr. Cecil Lindsay is a World War II veteran, having entered the Army in 1942 for a four year tour of duty, three years of which he served overseas in the Pacific.

In the early part of 1952, he attended the training school for Wildlife Protectors at the Institute of Government in Chapel Hill and was employed shortly thereafter by the Wildlife Resources Commission as the Protector for Caldwell County. Since that time he has done much, as the Commission's local representative in the area, to increase the understanding and appreciation of North Carolina's wildlife conservation program on the part of the Caldwell citizenry. He has the cooperation of the Sheriff's Department, the County Commissioners having furnished him a two-way radio on the Sheriff's frequency. He also has the respect of the judiciary in as much as game and fish law violations are not lightly considered by the courts in Caldwell County.

A native of Cleveland County, Mr. Lindsay graduated from Casar High School prior to the War. He is married and has one son.

It's the Law!

Question: Can a landowner lawfully charge me a fee for fishing in public waters after I have purchased a state fishing license?

species; teaching and helping others; and wildlife food plant surveys.

It is obvious that if each of the members performed only one of the activities mentioned, and many members do several, that the wildlife resources throughout the state are benefited. Furthermore, the training these 4-H members now receive is making them qualified sportsmen when they take to the field or stream in pursuit of their sport in years to come.

Perhaps one of the competitive interests in this project is the possibility that a youngster's work and activity may win him or her a chance to attend the annual 4-H Wildlife Conservation Camp held each year (this to be the 18th year) at Camp Millstone. By the way, Mr. Charles Horn, President, Federal Cartridge Company has been sponsoring this camp for years. Now, many Wildlife Federation Clubs and Civic Clubs offer county prizes to the better wildlife conservation activities.

We sportsmen should congratulate the state 4-H Club leader and his staff, the County Extension personnel who work with the 4-H boys and girls, the personnel of our State conservation agencies, and especially the 30,000 boys and girls who have participated in their wildlife conservation projects for the past decade.

Yes, these sportsmen of TOMORROW are preparing themselves TODAY.

Answer: A valid fishing license authorizes the holder thereof to fish in public waters, but it does not authorize him to trespass on private property in order to do so.

The landowner cannot charge a fee for the privilege of fishing in public waters, as such, but he may grant permission to enter on his land for the purpose of gaining access to public waters on payment of a sum of money, or he may withhold such permission altogether.

The Wildlife Resources Commission is now in the process of acquiring and developing many public fishing access areas for the purpose of insuring free public access to public fishing waters in the future.

Enforcement Record for January

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of January, 1955:

Persons checked		**32,419**
Total prosecutions		**531**
Total convictions		**495**
Convictions fined	**322**	
Convictions not fined	**173**	
Total fines collected		**$5,895.45**
Total costs collected		**3,717.87**

Regional Director's Letter

by Roland McClamroch
Regional Director, National Wildlife Federation

Since the beginning of civilization much has been said and written about leadership. Its qualities have been defined and extrolled in essay and epigram. But it is not my purpose here to discuss the qualities of leadership. I want to present some thoughts on the command and continuation of leadership.

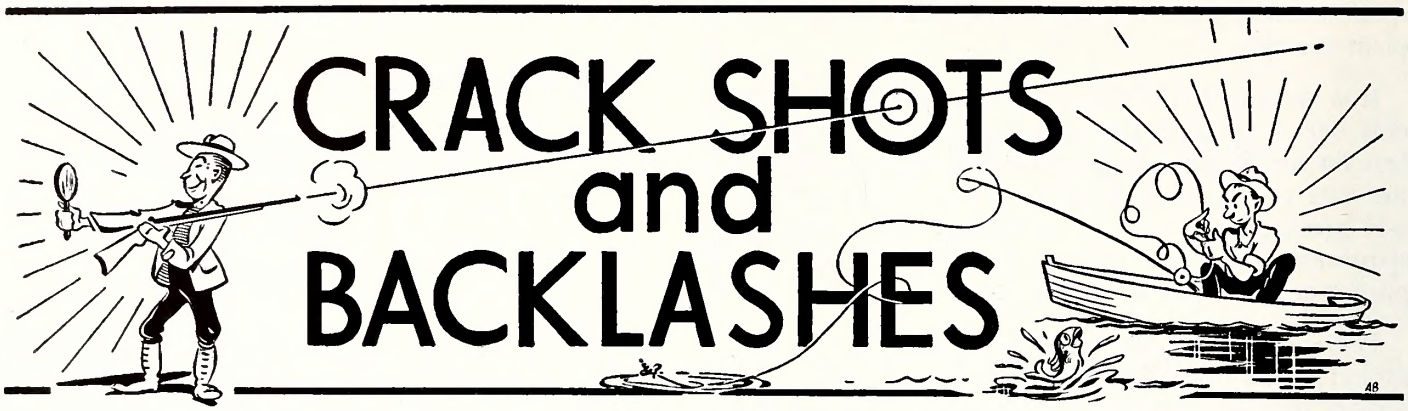
Since what I write is primarily directed to members of state wildlife conservation organizations, let's confine the discussion to them. That will, at least, keep us on familiar ground.

Obviously, an organization initially had leadership. Without some direction there would have been no beginning. The organizing leader, who may at times be a crusader, is to be welcomed. He stirs individuals to band together for a purpose which separately they would have difficulty attaining. Too often, however, after the organization has been achieved, the more prosaic job of enlarging the membership and disseminating the purpose of the group becomes less stimulating to the organizing spirit. Now, a different type of leader is needed. Usually he emerges from the initial group and this may be repeated several times and the ball is kept rolling. But what concerns me is how long can we expect under the usual haphazardness of organizational selection of leaders to keep the ball rolling?

Walter Lippman brings the problem and solution to us in this statement: "The final test of a leader is that he leaves behind him in other men the conviction and will to carry on." I choose to interpret this that besides the zeal engendered by the leader prospective replacements for those in leading positions are available. The point is that for a continuous progression of virile leadership the selection should not be left to chance. Every leader, and group of leaders, should from the day responsibility is assumed be alert to the necessity of bringing into the councils of the organization potential officer material. Personal domination or self-perpetuation has no place in a service organization. For either to pertain means the eventual withering of the organization for lack of successive leaders.

Whether your local club, state group, or national organization is involved, for any one of them to continue fulfilling its purpose you must recruit, groom, and elevate possible leaders.

Geese, timed by airplane speedometers, can travel at 60 miles per hour, and they hold the altitude record of 29,000 feet, which is nearly 5½ miles.



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

"A Fisherman's Prayer," which appeared on the back cover of our magazine has brought in many requests for reprint rights and for copies of the prayer suitable for framing. The Washburn Printing Company of Charlotte, who prints WILDLIFE has agreed to provide us with single copies suitable for framing. We will let you know more about how to get these copies later. Meanwhile, here is one of many letters we have received.

"Dear Sir:

"We have all seen the silly plaques, cartoons and the like about fishermen hanging in the den everywhere.

"But that prayer on the last page of January WILDLIFE would be something to frame sure enough. I am sure you must have thought of it by now, and if you decide to produce some prints suitable for framing I would like to secure a bunch of them and will of course be glad to pay for them.

Yours very truly,
E. L. Lowie"

Cowles Gaither, Newton, has bird troubles:

"Dear Sir:

"We have several feeding places around my yard for birds, and we have a lot of different kinds of birds, however, for a good while now we have had several mocking birds that have taken over.

"These mocking birds more or less stand guard and won't let any of the other birds come near the food. We were wondering if you ever had something like this brought to your attention, and if so, was there anything that could be done about it.

Yours very truly,
Cowles Gaither"

This is not an unusual situation. Mockingbirds are notoriously jealous of other birds being in or feeding in territory they have established as their own. They drive away smaller birds, and are especially pugnacious at nesting time. Perhaps some of our readers can come up with a practical solution. Mocking birds are nice to have around, but so are many other songbirds.

Take A Boy Fishing

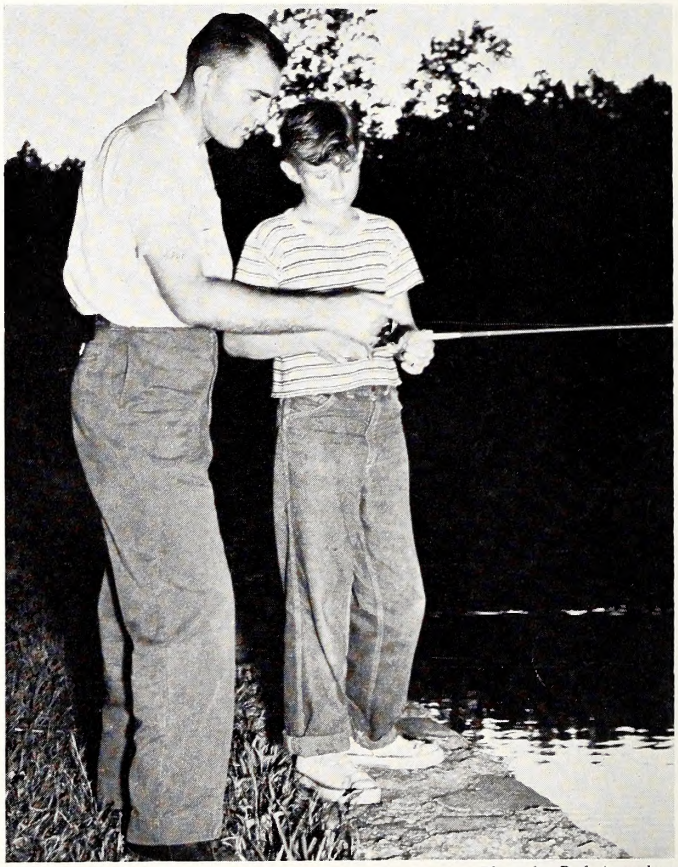


Photo by Rod Amundson

The slogan, "Take a boy fishing," will always be a good one. Remember the children of today will be the sportsmen of tomorrow.

"Dear Sir:

"I do not agree with anyone taking game with a 22 rifle. Too much game is wounded that is never bagged.

"Squirrels get in dens, the hunter wants to smoke him out or chop the den, which destroys his home.

"I'm 44 years old, received my first gun at the age of 12. It was a single barrel 12 gage shotgun. I was taught by my father to shoot clean, hunt clean, and to be a good sport, then landowners did not mind giving you permission to hunt. I have never gotten above a double-

barrel 12 gage shotgun. I have killed lots of turkeys, quail, squirrels, rabbits, ducks, and a few deer. But I say "if game escapes two shots let him go." Yes sir, in season or out of season I feel like a 22 rifle is public enemy number one to animals.

"For instance, during mating time I'll just call me up some Bob Whites and kill them. This thing will not make much noise. That's the way it goes. You may destroy a whole covey of quail with one bullet. I feel like the 22 rifle should be out-lawed to hunt with or to be hauled around in cars in or out of season day or night. That's my opinion.

Sincerely,
F. Jack Kelly"

Was it Voltaire who said, "I may not agree with what you say, but I will defend with my life your right to say it"? The .22 rifle was designed for a specific purpose. Its use otherwise is either illegal or unethical.

"Dear Sirs:

"Would you explain how Mount Chimborazo is further from the earth's center than Mt. Everest, please?

"Hope you don't think me too simple but this one stumps me.

"A very loyal reader.

Yours truly,
C. B. Borders"

This is one had us stuck for a while too. In case you missed it, the pertinent statement was made on the back of our February issue. Here is the way we figure it: The earth flattens toward the poles. Thus the diameter at the polar axis is less than the equatorial diameter. Mt. Chimborazo is almost exactly on the equator, Mt. Everest about 30 degrees north. Hence, though taller, its peak is nearer the center of the earth.

How Much Did You Guess?

Photo by Jim Lee

The photo of the "giant" bluegill appearing in last month's WILDLIFE created much speculation among our readers. Guesses ranged from ⅛ ounce to over three pounds. Many experts were not fooled by the toy coke crate; and to prove it, one reader, Joe E. Jackson, Jr. of Mount Airy, sent in a similar crate complete with plastic bottles. The fish actually weighed ⅞ ounce.

"Dear Sirs:

"Want to tell you I certainly do enjoy your swell magazine, and after reading it, one can easily see that North Carolina is doing lots to help save its natural resources. Here is one reader who has no complaints on your magazine.

T/Sgt. Cooke"

Thanks, Bill

"Dear Sir:

"Don't know if you folks are interested in this sort of thing or not, but some of the wildlife folks wanted me to pass it along — so here it is.

"Our Edgecombe County Game Protector, Henry Hilliard, is leaving us in a couple of days for a position as Park Ranger in the newly opened Natchez Trace Parkway in Mississippi. It's a U. S. Park Service job and, although we hate like the devil to lose "Hank" Hilliard, we're kinda proud that one of our North Carolina boys could land the position.

"Henry is a native of Scotland Neck, got his education in Scotland Neck and Norfolk, Virginia schools. He joined the Protection Division in 1947 and has been with us ever since.

"In the eight years he's been with us he's done a terriffic job and has gained a reputation as one of the best protectors in this neck of the woods — and we've got some good ones.

"We didn't want Henry to get away from us without our letting him know we were going to miss him, so we tossed a small party for the lad and his wife Thursday night and presented him with the cash to cover his transportation to Mississippi.

"Game folks on hand for the occasion included Supervisor Charlie Woolard, Wilson; Patrolman Jim Buffaloe, Rocky Mount; Patrolman C. B. Spain, Jr., Nashville; Protector Victor Coward, Jr., Scotland Neck; Protector Elmo Walls, Jr., Wilson; Protector N. B. Hughes, Jackson; and Protector Claude Ruiter, Jr., Spring Hope.

"Also on hand were Sam Myers of Tarboro, who has been a deputy protector for some years; Lt. Ernest Tilghman and Sgt. Kenneth Sutton of the Rocky Mount Police Department; and three or four others who have known Henry for a good many years and wouldn't have missed the farewell affair for anything.

"Just thought maybe you might have some use for this type of news.

As always,
Bill Johnson"
Rocky Mount Telegram.

"Dear Sir:

"Will you please advise me whether or not it is unlawful to place bales of hay in a lake or stream for the purpose of attracting fish (crappies) and also is it legal to put bags of stale bread and other bait around or near the hay.

"If these things are lawful will you please tell me the kind and amount of hay and the best way to place it. Is the hay for food or protection?

"I enjoy reading lots of outdoor life magazines but none of them are as interesting as WILDLIFE for your

SAVE GAME—CONTROL SELF-HUNTING PETS

Photo by Jim Lee

A nestful of quail eggs or baby rabbits often provides an easy meal for self-hunting dogs—and cats, too! It is not always the unwanted stray that causes the damage, for even the best of pets will not ignore a choice morsel of food if tempted.

SAVE GAME—CONTROL SELF-HUNTING PETS

stories and articles are about people and fishing and hunting right at home.

"Will be grateful for any information you can give me on the above.

Sincerely yours,
W. E. Newton"

As far as we have been able to learn, the stale bread or baled hay technique is legal as long as no poison is involved. Maybe someone can tell Mr. Newton how to go about this type of fishing. Certainly a bale of hay submerged in a lake or pond would produce fertilizer, which would produce micro-organisms which would produce larger animals which would attract fish. It might afford protection. Sounds like it is worth a try.

"Dear Sir:

"I think it would be a good idea if the N. C. Wildlife Resources magazine was sold on a lifetime basis such as the American Rifleman. The membership fee could be somewhere in the neighborhood of $12.50 (along the same basis as the American Rifleman). Why don't you mention this in the next issue and get some other people's views. If this lifetime membership plan should ever go through please put me down for the first member.

Yours very truly,
Glenn T. Youngblood"

Okay, let's have some views on this. WILDLIFE remains neutral.

The woodcock is the only bird in the western hemisphere whose upper bill is movable, and the beak can be used like a pair of tweezers to grasp food below the surface of the ground.

1954 LAKE MATTAMUSKEET WATERFOWL HUNT TABULATION

November 10, 1954 — January 8, 1955

Species	*Total Season's Kill*
GEESE	2,420
PINTAIL	1,724
MALLARD	947
BLACK DUCK	771
GADWALL	34
WIDGEON	301
GREEN-WING TEAL	378
BLUE-WING TEAL	28
SHOVELLER	24
WOOD DUCK	12
REDHEAD	2
RINGNECK	5
L. SCAUP	4
RUDDY	8
COOT	79
COMBINED TOTAL SEASON'S KILL	6,737
TOTAL NUMBER OF PERMITS	3,560

The largest living specimens of American trees as reported by the American Forestry Association include the following found in North Carolina:

Chinaberry ..... Cumberland County
Carolina Hemlock ..... Transylvania County
American Holly ..... Pamlico County
Beetree, or White Basswood ..... McDowell County
Loblolly Pine ..... Wake County
Shortleaf Pine ..... Burke County
Sourwood ..... Pisgah National Forest
Red Spruce ..... Great Smoky Mountain National Park
Witchhazel ..... Yancey County

Cartoon by Jim Lee

"Okay. Now give him a gentle tug."

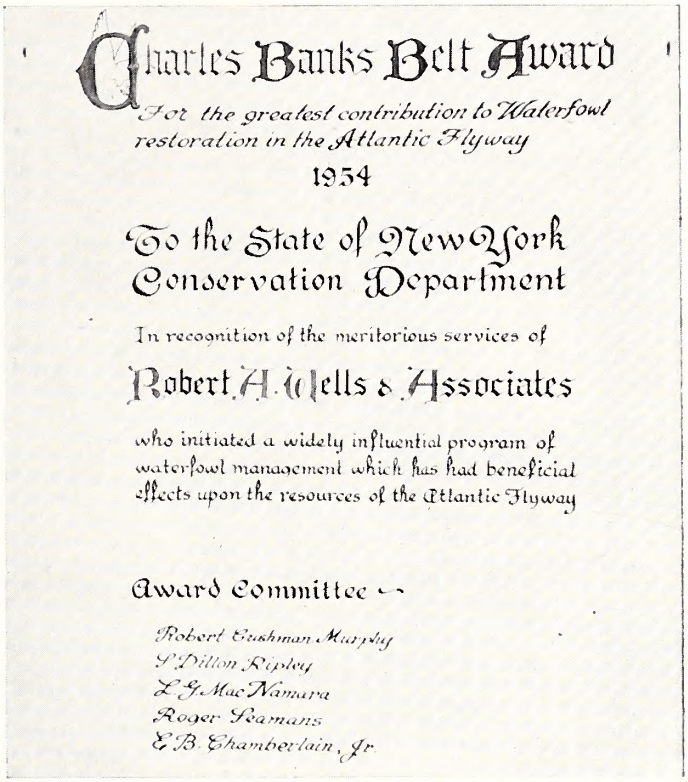
Photo by L. G. Kesteloo

Commission Executive Director Clyde P. Patton (right) presents the Belt award to Robert A. Wells, Director of the New York Conservation Commission.

Charles Banks Belt Award

An outstanding feature of the January meeting of the Atlantic Waterfowl Council was the presentation of the Charles Banks Belt Award to Robert A. Wells, Director of the New York Conservation Commission, in recognition of his and the Commission's outstanding services in connection with waterfowl management in the Atlantic Flyway.

The Belt award, in the form of a scroll and a medallion, is given each year to the individual or agency considered to have performed the most outstanding services in the field of waterfowl management. Belt, a New York sportsman, conservationist, and realtor, is one of the founders of the waterfowl council system which serves to bring about closer cooperation among states in the four waterfowl flyways, and between states and the federal government in waterfowl management affairs.



North Carolina's Wildlife Resources Commission has contributed considerable cooperation and talent to the Atlantic Waterfowl Council. Clyde P. Patton, Executive Director, serves as council chairman, and T. Stuart Critcher, Federal Aid Coordinator, Game Division, serves as secretary.

The Atlantic Waterfowl Council is composed of seventeen states: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Delaware, Maryland, Pennsylvania, West Virginia, Virginia, North Carolina, South Carolina, Georgia, and Florida.

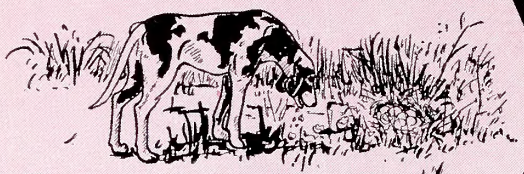
FROM DARE COUNTY

Photo by Roy Eubanks

New Wildlife Protection Division boat, the *Marie Bee*, shown zooming across the water on a test run, is now being used to patrol the vast wilderness waters of Dare county. Twenty-nine feet long and powered with a 200 H. P. motor, it is designed for high speeds and shallow water. The *Marie Bee* is equipped with modern radio equipment, galley, and sleeping accommodations for four. According to her skipper, Wildlife Protector Stanford White of Manns Harbor, the boat is "equal to the best" for law enforcement work.

You can't keep a good fisherman home when there is a chance the fish are biting—even during the winter. And one warm February day, A. L. Wright of Durham headed for Dare county to catch a nice string of bass. Wildlife Protector Stanford White is shown checking his catch. It is a preview of the good fishing to be had in Dare this season. The Wildlife Commission is developing a free Fishing Access Area on the shore of East Lake near Mashoes, opening up one of the most fabulous fishing spots in the east. Heretofore East Lake could be reached only by a long and sometimes treacherous boat trip.

ARE THESE YOUR PETS



Thousands of nests and young birds and animals will be destroyed on the ground this spring by self-hunting pets

You won't find this game in the field next season

About 50% of next season's deer crop on one Wildlife Management Area was destroyed last spring by packs of self-hunting dogs — Does with young and fawns are particularly easy prey — This loss occurs all over the state

Our responsibility to our Wildlife lasts the year 'round — ***Let's do something about it ...***

KEEP PETS UP THIS SPRING

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Wildlife
IN NORTH CAROLINA

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MAY · 1955

Photo by Jack Dermid

Reflection

Who could fail to see the beauty and hope of a fawn in a tranquil outdoor setting? The time for fawns is fast approaching, but self-hunting dogs will see to it that a peaceful life is not the fate of all of this spring's crop. Uncontrolled dogs constitute by far the greatest predation threat to deer in North Carolina; and as long as they are free to roam the countryside during all seasons of the year, Commission deer management and restoration programs will be greatly handicapped.

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

LUTHER H. HODGES
Governor

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The night before a big adventure in fishing—interpretation by artist Bill Ballard. Just as any other sport, fishing has its rules of fair play.

☆ ☆ ☆

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Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all materials published.

☆ ☆ ☆

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State News Bureau Photo by Sebastian Sommer

The LARGEMOUTH BASS

(Micropterus salmoides)

by Duane Raver

Fisheries Investigator

From the fresh-water ponds behind the dunes at Nags Head — opposite photo — to the mountain-rimmed lakes of western counties, the bass is the number one game fish of Tar Heel anglers.

You may have met the largemouth bass on the end of a bait-casting outfit far out in a mountain reservoir in western North Carolina, or swirling at a popping bug in a Piedmont farm pond. Perhaps your first encounter with "Mr. Bigmouth" was at the edge of a reed-lined coastal sound with spinning tackle. Any of these meetings is possible since the largemouth is widely distributed in all sections of North Carolina and is found in a variety of waters. Perhaps more anglers fish for largemouth bass than for any other inland game fish in North Carolina.

The bass' popularity as a game fish is justified, although some anglers who have encountered unusually lethargic individuals will have some derogatory comments to make. Even a fine sportsman like the largemouth can't please everybody. The best way to judge the fighting qualities of this fish is to tie into a three pounder on light tackle and then decide for yourself. This holds true for the eating qualities of the largemouth, where again you have to make up your own mind after eating a properly prepared specimen. Most anglers who are devoted followers of this unpredictable fish rate him high, both as a worthy opponent on the line and a succulent morsel on the table.

It comes as something of a surprise to many fishermen to learn that the "largemouth bass" is not a bass at all but a sunfish. The largemouth, and his first cousin, the smallmouth bass, are important members of the family Centrarchidae, which also includes the bluegill sunfish, the pumpkinseed, the crappie, the warmouth, the robin, and several smaller sunfishes. The scientific name of the largemouth bass, *Micropterus salmoides,* is somewhat descriptive and means a salmon-like fish (*salmoides*) with small fins (Micro-pterus). This, perhaps, has given rise to one of the largemouth's nicknames of "trout." Also included among its many aliases are "linesides," "green trout," and "chub."

Most fishermen should have little trouble in distinguishing the largemouth bass from even its closest relative, the smallmouth, when the identifying characteristics are kept in mind. The spinous dorsal fin of the largemouth bass is almost entirely separated from the soft dorsal fin; while, in the smallmouth, these two fins are obviously connected. The upper jaw of the largemouth extends beyond the back of the eye when the mouth is closed; in the smallmouth, the upper jaw extends only to about the center of the eye. The scales of the largemouth bass are quite large and conspicuous; but those of the smallmouth are rather small and almost indistinguishable on the lower cheek. One of the surest methods of identification is the number of rows of scales on the cheeks. The largemouth has nine or ten, but the smallmouth has about seventeen rows.

Color varies in the largemouth from almost black through various shades of bronze-green to pale greens and yellows. However, a distinctive dark band, or series of blotches, is usually present down the midside of the largemouth bass. The average size is under five pounds, although many over ten pounds are taken annually in North Carolina.

Habitat

The habitat tolerances of the largemouth enables it to survive and do well in slightly brackish water, both acidic and alkaline situations, and even in somewhat turbid waters. However, most any type of pollution will cause the bass to seek clean waters and will prevent reproduction and fry development. Excessive turbidity, caused by poor land management practices on the watershed, will soon destroy much of the bass population by smothering the eggs. Another factor which limits the abundance of this fine game fish is the excessive water-level fluctuations of hydro-electric reservoirs. Often times large quantities of eggs which were deposited in water two to four feet deep are killed by being exposed to the air. This problem is being solved on a small scale by one of the State's leading power companies which has cooperated to the extent of holding water levels constant in its largest reservoir during the critical spring spawning period.

The largemouth bass is not at all particular about his home. It may be a one-acre farm pond or a thirty thousand-acre lake, as long as the water is pure, the food supply adequate, and the spawning situation tolerable. The habitat requirements of the largemouth differ rather markedly from those of the smallmouth, although the two are found together in some of the mountain lakes in western North Carolina. The smallmouth prefers colder water and requires gravel or coarse sand for spawning purposes. This, of course, limits the range of the smallmouth quite drastically, but the largemouth can stand warm water and will spawn on any bottom except soft silt or muck.

Life History

Perhaps more has been written about the life history of the largemouth bass than of any other fresh-water fish. This may be partially due to the fact that its habits are relatively easily observed, but more probably due to the tremendous angling popularity of the species. The nest building of the largemouth bass is done by the male. It usually is in water from two and one-half to five feet deep. The nest is a circular, shallow, saucer-like depression from twenty to thirty inches in diameter, and is constructed on most any type of bottom—so long as the bottom is hard and not soft mud. This spawning-bed construction usually starts when the water reaches sixty degrees. The actual egg laying begins after the water has reached about sixty-seven degrees and has remained at this temperature for two or three days. The eggs are deposited near the center of the nest, and hatch in a week or ten days if the water temperature stays between sixty-five and seventy degrees. Should the water temperature drop during the spawning period, all egg laying will cease and the eggs already spawned usually are killed. However, should the water temperature rise and stay moderately warm, the hatching period will be shorter.

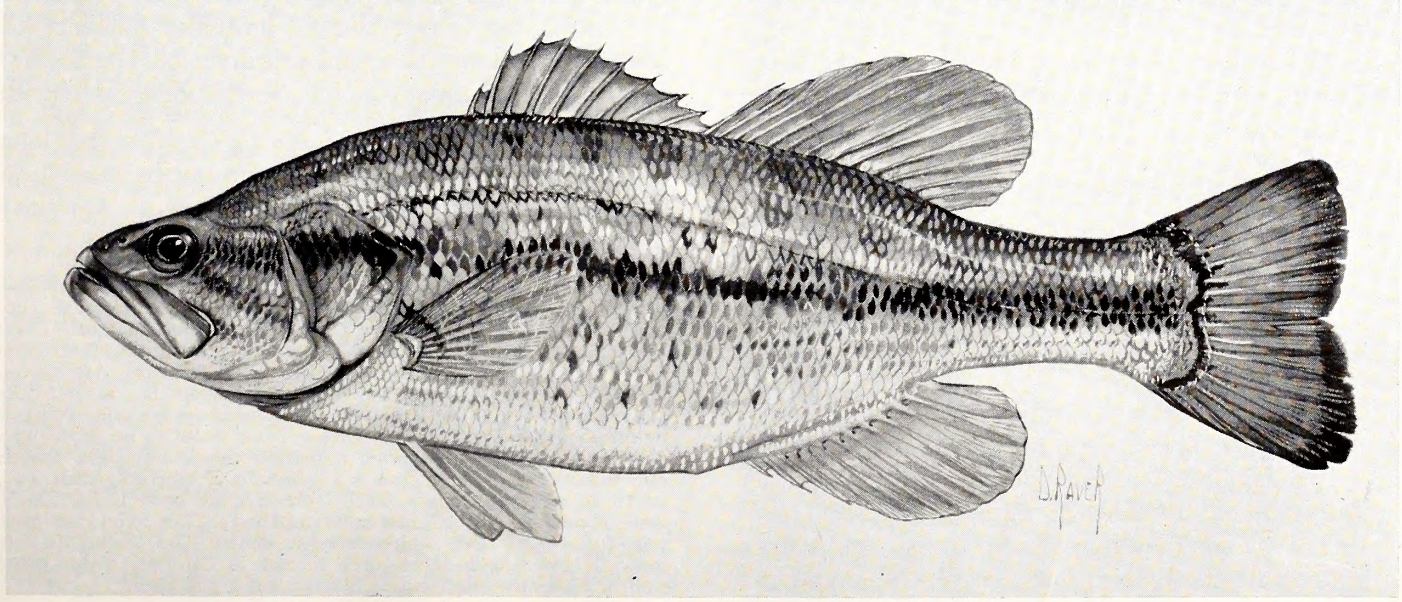
Although smallmouth bass fry disperse rapidly within forty-eight hours after hatching, the young of the largemouth stay in compact schools for several weeks. They are carefully guarded by the male bass during that period. The schools of tiny bass fry can be seen moving close to the shore of most ponds and lakes during late May and early June.

Until the young bass fry reach approximately two inches in length, they feed almost entirely on microscopic plants and animals and immature aquatic insects. Very soon, however, the diet changes to the tiny fry of minnows and sunfishes which were spawned a few weeks later. Under ideal conditions, a largemouth bass will attain nine inches in length by the late fall of its first

•——————————See BASS Page 18

Painting of a largemouth bass. Three characteristics—the dorsal fin, the length of the jaw, and the number of rows of scales on the cheek—can be used to easily separate the largemouth from the smallmouth. See text for details.

Illustration by Duane Raver



Twenty-nine beaver released in the Sandhills Wildlife Management Area in 1938 thrived, and today the State's population is estimated to number about 5,000.

THE *Beaver* IN NORTH CAROLINA

by Kenneth A. Wilson
Fur Resources Biologist
Photos by Jack Dermid

Do you know when the beaver became extinct in North Carolina? What role did they play in the life of the early settler? How many beavers populated North America before the coming of the white man? When and where were they stocked in the Tar Heel State? Are they increasing? What benefits result from their presence? What harm do they do? Can they be legally trapped? What contribution can the beaver make to water conservation in the State? The answers to these and other questions can be found in the following discussion.

Before the first pioneers came to this country, an estimated 60,000,000 beavers inhabited North America and, presumably, several hundred thousand populated North Carolina. When the first white men settled Roanoke Island in 1585, they found the surrounding tidelands teeming with wildfowl, muskrat, mink, and beaver. By 1663, when the Province of Carolina was granted to eight noblemen by King Charles II, the importance of the beaver in world trade was firmly established. North Carolina history contains numerous references concerning the beaver and its profound influence on settlement, colonization, and government. The following historical citations contain a few of these references:

(1) *Lawson's History of North Carolina,* by John Lawson, 1714 (From edition sponsored by the North Carolina Society of the Colonial Dames of America) pp. 123-124.

"Beavers are very numerous in Carolina, there being abundance of their Dams in all Parts of the Country where I have traveled. They are most industrious and greatest Artificers (in building their Dams and Houses) of any four footed Creatures in the World. Their Food is chiefly the Barks of Trees and Shrubs, viz: Sassafras, Ash, Sweet-Gum and several others. If you take them young they become very tame and domestic, but are very mischievous in spoiling Orchards by breaking the Trees and blocking up your doors in the night with the sticks and wood they bring thither. If they eat anything that is salt, it kills them. Their flesh is a sweet Food, especially their Tail, which is held very dainty. Their Fore-Feet are open like a Dog's, their Hind-Feet webbed like a Water-Fowl's. The Skins are good Furs for several Uses, which everyone knows. The Leather is very thick; I have known Shoes made thereof in Carolina, which lasted well. It makes the best Hedgers Mittens that can be used."

So wrote John Lawson, Gent. Surveyor-General of North Carolina in 1714.

(2) *The Colonial and State Records of North Carolina,* Vol. II, p. 785.

"The Journal kept by the surveyors of the dividing line between Virginia and North Carolina, 1728, interestingly describes the wildlife encountered daily and frequent reference is made to beaver or beaver dams. 'October 2. The Surveyors hastened away by 9 o'clock and ran the Line 9 miles 254 poles. Little more than three miles from our last Camp we forded a Creek called Massamong, an Indian name signifying painted-water from red oker found on the banks of it, which in a flood tinges the water. Three miles further we made a hard shift to pass over Yapatsco or Beaver Creek, the water being damm'd up by these industrious animals so high as to make the fording of it difficult. Then we proceeded 3 miles 174 poles beyond that and encampt on the west side of Ohimpamany Creek, signifying in the Indian Language fishing Creek. On our way we shot a Wild Cat as he was making good chear upon a Fox Squirrel. They likewise killed three Deer, which made great plenty, &c Consequently great Content in our Quarter.' "

(3) Vol. XXLII, p. 136.

"Beaver were not only valuable articles of commerce, but sometimes served other purposes as well such as a beaver dam being used in locating the boundaries of Edenton. 'At a General Assembly, held in Edenton, the Twenty First Day of August, in the Year of our Lord One Thousand Seven Hundred and Forty. Gabriel Johnston, Esq., Governor the following law was passed: An Act, for confirming Titles to the Town Lands of Edenton, for securing the Priviledges heretofore granted to the said Town, and for further Encouragement and better Regulation thereof. . . . Whereas, Pursuant to the several Acts of Assembly of this Province heretofore passed and Ratified, Four Hundred and Twenty Acres of Land, lying in the Fork of Queen Ann's Creek in Chowan County in the Province aforesaid, bounded Eastward, by the lands of Miles Gales; Northward, by the lands of William Badham, deceased, and George Lisles; on the westward, by the Beaver Dam and Creek, and on the Southward, by the Sound, was purchased by the public, and hath been laid out for a Town, called Edenton . . . ' "

These reports cite specific instances of contact with the beavers and their works but fail to mention that for nearly 200 years the colonists considered all other furs of secondary importance. During most of this time the beaver skin was used in barter as a medium of exchange. As late as 1833, the Tarheel who needed a gun could buy it for twenty beaver skins and, for another skin thrown in, eighteen bullets. That year, twenty skins sold in London for 32 pounds and 10 shillings ($162.50 at present day currency). Most beaver fur was used to make felt for the manufacture of "beaver" hats, a very popular hat in those days. Thousands of trappers over most of North America were seeking their pelts annually. Big fur trading operators made vast fortunes. In the early 1840's manufacturers introduced the silk hat. It went over big. And the market for beaver collapsed. Skins worth $6.87 in 1839 dropped to 85c by 1846. The big demand for beaver fur was over. But it was just as well because the big rodents were disappearing fast. Undoubtedly this turn of events slowed down the disappearance of the beaver in North Carolina. Indiscriminate and unregulated trapping, however, cut deeper into their numbers each year. By 1900 only a few remained and the last known beaver trapped in the State came from the Dan River Valley in Stokes County shortly before World War I.

In the fall of 1938, twenty-nine beavers purchased from Pennsylvania were released on what is now the Sandhills Wildlife Management Area in Richmond County. Vast stretches of woodland and a network of slow-flowing streams provided for their needs. Trees were cut, dams and ponds were constructed, lodges were built and the population increased. The ponds attracted wood ducks and it is here that they rear their young. During winter months, mallards, teals, black ducks and other waterfowl use the watery havens for places to rest and feed. Deer sought the sanctuary of the beaver ponds to escape the fangs of pursuing wild dogs. Muskrat, mink, and otter were attracted. Fish were also benefited. Under complete protection, beaver populations continued to increase. A census of the 57,000-acre area in 1949 disclosed seventy-seven dams and an estimated population of 380 beavers. At the time animals were present in at least seven North Carolina and two South Carolina counties.

As the beaver increased and wandered off state property, it became apparent that all their work was not good. Reports of flooded cultivated land, timber, roads and damage to corn were among the principal com-

Exeess beaver in the Sandhills are being live-trapped and transplanted to other seetions of the State where conditions are found suitable for them. Here a trap is being set at a break in a dam. Below: Closeup of a pair of beaver in a shipping erate.

plaints. Where possible, animals responsible for the damage have been live-trapped and released at scattered points over the State. A total of 40 beavers has been released in six counties: Northampton, 15; Person, 7; Surry, 6; Rockingham, 4; Cherokee, 4, and Nash 4. Of these releases, the writer has inspected only the one in Northampton County. Four of the 15 beavers stocked here were killed by automobiles. Despite this set-back, two colonies were found, both on the headwaters of small creeks in the middle of swampland. Sweet gum, one of the trees cited by the historian, was the principal food being eaten, also small amounts of alder. The biggest tree cut by the beavers was eight inches in diameter but saplings one to four inches in diameter were being felled in largest quantities. One dam flooded an acre, the other about five acres. Both ponds contained fish. Muskrats were likewise present and the tracks of raccoons and mink were also seen. Wood ducks were flushed from one pond and their feathers were found at the other. In October at the time of inspection, many streams and practically all swamps in Northampton County were dry. In recent years, drought has seriously affected farms in many sections of the State. Reservoir water supplies have reached an all-time low and thousands of wells in the State have gone dry. With this in mind, it was indeed gratifying to see these beaver ponds overflowing water and to realize that at least two water conservation projects in the county were getting results.

While attending the Millstone 4-H Conservation Camp in August, 1954, one of the camp members, Mr. Jackie Morris, Tyner, North Carolina, informed the writer that beavers were living on a creek near his home in Chowan County. No individuals were seen but several cuttings were found that were obviously the work of beavers. An inspection of the area in November, 1954, disclosed the presence of a beaver house but no dam. Talks with fishermen revealed that Gates County to the north also has beavers. These animals were not stocked by the State. Virginia on the north supports the species, however, and it is believed they came from here.

According to Walter Price, Manager of the Sandhills Wildlife Management Area, about 5,000 beavers are now believed to be living in the State. The bulk of these animals inhabit five counties in and adjacent to the area. Seventeen years have passed since the release of the 29 beavers in 1938. During this time, no trappings has been allowed. As populations multiplied, numerous members moved from woodlands where they belong to cultivated land where they do not belong. Complaints of damage done by the big rodents increased. To protect the farmer some other means than live-trapping was needed to reduce the number of nuisance beavers.

This year, therefore, the Wildlife Resources Commission designated a four-week, February 15-March 15,

•——————————See BEAVER Page 10

A lone beaver ventures from shore in the calm of evening, a sight that gives added thrills and pleasure to a fishing trip or outing. The return of the beaver to North Carolina is a story of conservation in action.

BIBLICAL MAMMALS

by Bill Hamnett

One does not read very long in the Bible before reading a reference to nature or about the creatures of nature. The Bible shows how close it is in harmony with the great work of creation which in the beginning was pronounced very good.

Animals belonging to the monkey tribe are but sparingly mentioned in the Bible. The reason for this reticence is simple enough. No monkey was indigenous to Palestine when the various writers of the Bible lived. It is thought, though, that Solomon, ever seeking knowledge through observation, established a menagerie of many species including monkeys and apes brought from foreign lands. This animal then was a curiosity seen by few people; so it was not mentioned metaphorically to all.

Among the animals that were forbidden to be eaten by the Israelites, we find the bat prominently mentioned, and in one or two parts of Scripture this creature is alluded to with evident abhorrence. Read Isaiah II, 20 and Leviticus XI, 19-20. These "nightfliers" of the Scripture were associated with darkness, seclusion, disease, and contempt.

Though the lion today is not found in the Holy Lands, in early times it was found and mentioned more frequently than any other undomesticated animal. There is scarcely a book in the Bible that does not contain some mention of this animal; sometimes describing the actions of individual lions, but mostly using the word as an emblem of strength and force, whether used for a good purpose or abused for a bad one. The habits of the animal are found in the following selections: (courage) Proverbs XXVIII, 1; (slyness) Psalms X, 9; (caution) Amos III, 4. And who is not familiar with the story of David as a boy watching his flock; as well as Daniel in the lion's den.

Of the leopard little is said in the Bible, though where mentioned it is forceful. In Isaiah XI, 6, we read of herds and flocks (symbolizing people) and their enemies the wolf, leopard, and lion. The wolf as a rule devastated the flocks; the leopard would steal upon and carry off the stragglers; the lion being more daring attacked and carried away his choice to a lair where wolf and leopard would not venture.

It is a very remarkable circumstance that the word cat is not once mentioned in the whole of canonical Scriptures and only once in the Apocrypha. Since the cat, a favored companion of the Egyptians, among whom the Israelites lived while they multiplied from a family into a nation, was known it seems remarkable that the sacred writers did not even mention it.

In all other parts of the world, the dog is one of the most cherished and valuable animals, but among those people whom we popularly class under the name Orientals, the dog is detested and despised. Wherever we turn in the Bible to the mention of dog or dogs it is associated with some repulsive idea. Goliath said to David, "Am I a dog, that thou comest to me with staves"? Refer to Matthew VII, 6; Matthew XV, 26; Phillipians III, 2; and Revelation XXII, 14-15.

The wolf is only mentioned in a metaphorical sense, never directly. The habits of this animal were well known and this is the basis for its use in the writings. Take for example, Genesis XLIX, 27; Ezekiel XXII, 27, or Matthew VII, 15. That the wolf is a special enemy to the sheep-fold is shown in many parts of the Scripture. In John X, 1-16, Jesus compares Himself to a good shepherd, who watches over the fold and would rather give up His life then should wolves succeed against Him. The false teachers are compared to bad

Biblical references to the fox are embodied with the cunning and stealthy habits it possesses.

Photo by Jack Dermid

shepherds, hired for money, but having no interest in the sheep. In Luke X, 3—"we are sent forth as lambs among wolves".

The references to the fox and hyena are embodied in the cunning and stealthy habit they possess. The weasel and ferret are mentioned only once.

Whatever doubt may exist as to the precise identity of various animals, there is none whatever about the bear. Solomon used the bear in Proverbs XVII, 12; and in Hosea XIII, 8 the same idea is noted. The bear is twice used as a symbol exhibited to a seer in a vision, in Daniel VII, 5 and in Revelation.

There is perhaps no animal which occupies a larger space in the Scriptures than the sheep. Whether in religious, civil, or domestic life we find the sheep part and parcel of the Hebrew nation. The Old Testament foretold the New in the Messiah as the lamb that taketh away the sins of the world. The many references in the Bible use all the parts of a sheep and many of its habits and nature.

Whether considered in reference to food, to clothing, or to sacrifice, the goat is scarcely less an important animal than the sheep. On the celebration of the Great Day of Atonement, the goat had preference over the sheep. From this celebration we have our current expression—scapegoat.

The deer, fleet of foot and tasty flavor, is mentioned often in the Old Testament. The most beloved reference to the deer is Psalms XLII, 1.

The camel was used much in biblical times. The most poignant reference to the camel is in Matthew XIX, 24. This well known passage needs some little discussion. In Oriental cities there were in the large gates small and very low openings called "needle eyes." A camel could not pass through unless its burden was unloaded, kneeled down and shuffled through on its knees. A camel must kneel, and bow down his head to creep through; and thus the rich man must humble himself.

The horse is mentioned more frequently in its connection with war. In Proverbs where many animals are used in reference, very little is said of the horse.

Of all the animals mentioned as unfit for food none was despised or detested as were swine. Not only was this meat taboo, but Jews thought themselves polluted had they even been touched by a hog's bristle. What about the great metaphor—"Cast not your pearls before swine".

Although the elephant is not mentioned directly in the Scriptures, there is much use of the ivory obtained from the animal.

These are but a few of the animals mentioned in the Bible. Of course we realize that Nature is used in many forms in the stories and teachings we read. There are birds, fish, reptiles, invertebrates, plants, trees, and shrubs.

The Bible contains some of the finest text material for a better appreciation of the out-of-doors, our obligations to fellow man, and our obligation to the world we live in.

BEAVER

from page 8

trapping season in Hoke, Moore, Montgomery, Richmond, and Scotland counties.

Now that a substantial number of beavers inhabit the State we must use wisdom in their management. Immediately, however, we run head-on into many conflicting opinions and views. Here are some of them: To the nature lover and millions of Americans, the beaver is a symbol of industriousness and energy. Mention of its name immediately stirs up interest. Perhaps that is why each year some folks think nothing of driving one hundred miles or more just to see a beaver dam. The trapper sees the beaver in terms of recreation and dollars. Highway personnel and auto drivers who find roads flooded describe the animal with words like "nuisance." Some farmers dislike them for the corn they eat and the pasture they flood, while hunters and trappers like them because the ponds that they build benefit waterfowl and furbearers. Some fishermen have little use for them because dams are believed to destroy the value of a stream for trout. In some instances that is true. On the other hand a dried-up stream is incapable of supporting trout or any other aquatic life. During the past few years hundreds of mountain trout streams in western North Carolina have dried up. Some foresters do not have any use for beaver because of the trees they cut down or otherwise destroy. Yet the ponds they build serve as firebreaks, provide precious water for fighting forest fires, retain water in the forest and in many parts of the country play an important role in prevention of floods. These views represent a cross-section of public opinion regarding the beaver. But an important point remains yet to be mentioned. What is the demand for beaver skins and what are they worth? At this writing we do not know. Like most fur prices in recent years, the amount paid for beaver pelts have dropped. Last October one fur dealer said that he would not risk more than $5 for the biggest pelt. Trappers will not bother with beavers at such a low price. In some states, lack of trapping has already resulted in populations getting out of hand. This must not happen here. We must manage the beaver with caution and wisdom.

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FISHING ACCESS AREAS

by Leon K. Thomas
Superintendent, Access Areas

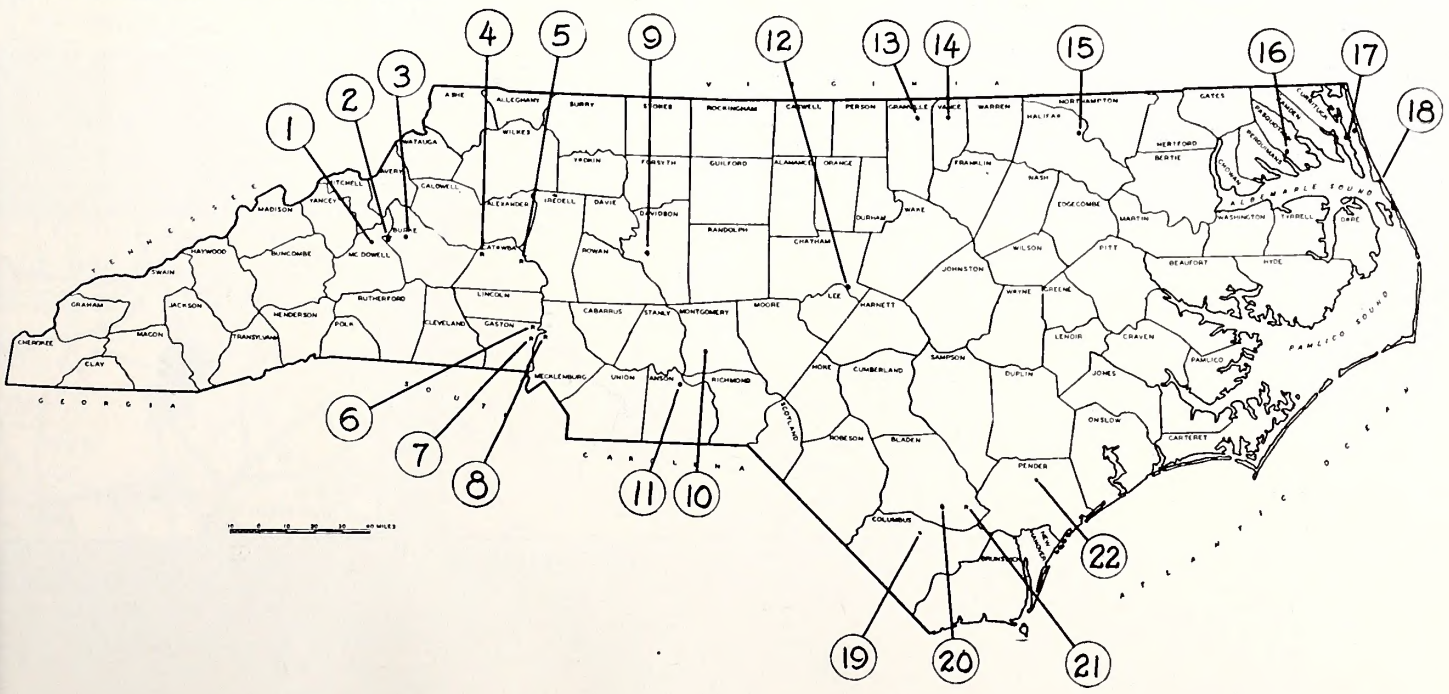
"FISHING ACCESS AREA — PUBLIC WELCOME." Where once confronted with "NO TRESPASSING" signs wherever he sought to launch his boat into public waters, the fisherman is now finding scattered throughout the State twenty-two public fishing access areas where he is invited to park his car and launch his boat. Built by the Wildlife Resources Commission to aid the angler in reaching public waters, the areas are for his convenience. Use of the facilities is free, and the sportsman does not have to ask anyone for permission to use them.

The program was begun early in 1953, when it was realized that the water-front property was rapidly being developed by individuals to the point where the general public could no longer reach public fishing waters without crossing posted land. Naturally, property adjacent to good fishing waters is desirable for cabin sites and other development, and one can hardly blame the cabin owner who perfers privacy on his property. However, for those who do not own land along the water, this leaves no place to launch a boat when all the property surrounding an area has been posted. In remote areas, where no development of water-front property has taken place, access is often barred to the fisherman with a boat by steeply sloping banks or dense growths of trees. Even if launching the boat presents no special problem there remains the difficulty of finding a place to leave an automobile while the sportsman is on the water. To overcome these problems the fishing access area program was started to enable the fishing public to reach the fishing waters.

The first access area was built on the Roanoke River, near the Striped Bass Hatchery in Weldon, on land owned by the town of Weldon. A parking area was constructed, and a modern launching ramp was extended into the river so that boats could be unloaded into the water with ease. The facilities proved to be such an immediate success that Buford L. Tatum, then in charge of the program, began aquisition and development of other areas. Since then, twenty-one other areas have been opened to the public, and five more are under development. From Lake James, in McDowell County, almost in the shadow of Mt. Mitchell, the areas extend eastward to Avalon Beach, in Dare County, less than a mile from the Atlantic Ocean. Long-

•——————See ACCESS AREAS Page 14

The twenty-two fishing access areas are distributed throughout most of North Carolina, from McDowell County in the west to Dare County in the east. For specific directions on how to reach each area, refer to the numbered maps on the next page, which correspond to the numbers below.



FISHING AC

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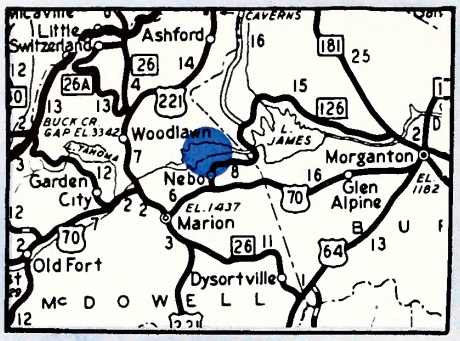
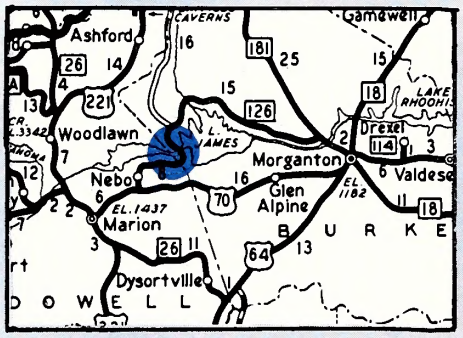
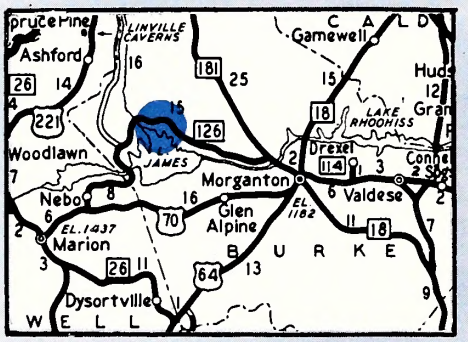


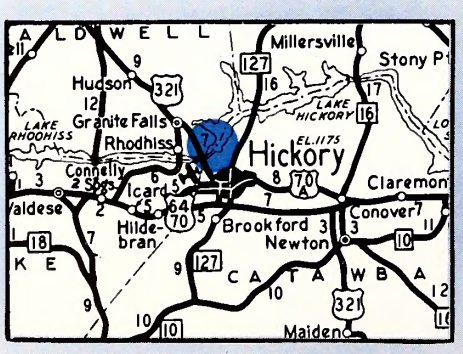
1 MCDOWELL ACCESS AREA on Lake James may be reached from US 70 by turning north 5 miles east of Marion onto NC 126. Follow NC 126 about 1 mile to tackle shop at intersection. Turn left onto dirt road and follow for .7 mile to dirt road right. Turn right and follow for .6 mile to area.



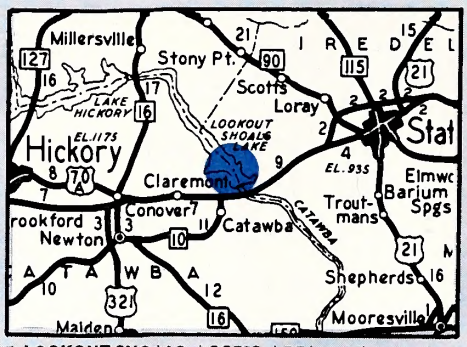
2 CANAL BRIDGE ACCESS AREA may be reached from US 70 by turning north 5 miles east of Marion onto NC 126. Follow NC 126 across dam into Burke Co. Area is between dam and Canal Bridge.



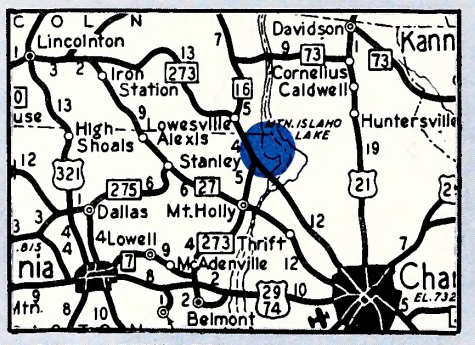
3 LINVILLE RIVER ARM ACCESS AREA is located on NC 126 about 1 mile east of Linville River Bridge. From Marion turn north on NC 126 at Nebo, follow NC 126 for 11.8 miles. From Morganton, follow NC 181 north for 2 miles then turn left onto NC 126 and follow for 11.4 miles to area.



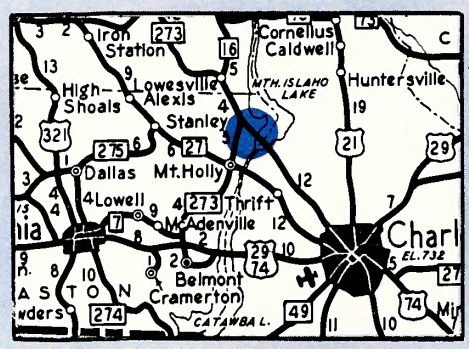
4 HICKORY LAKE ACCESS AREA may be reached by following US 321 north from Hickory 1 mile past city limits to 12th St. Turn right onto 12th St. and follow for 1.3 miles to area, which is on left between Wildlife Club grounds and Moose Lodge.



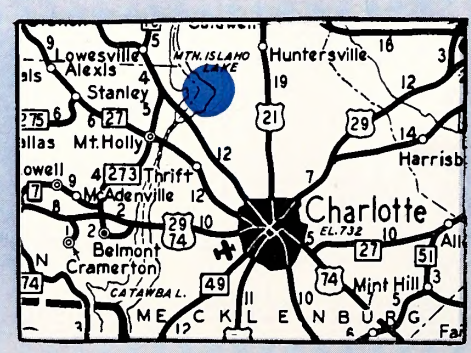
5 LOOKOUT SHOALS ACCESS AREA can be reached from US 64-70 by following Lookout Dam road for 5 miles north from Claremont to intersection with Oxford School road. Turn right and follow Oxford School road about 1 mile to sign on left.



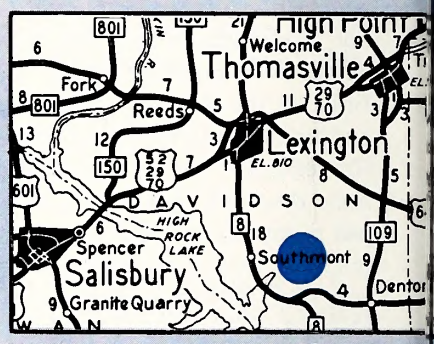
6 LUCIA ACCESS AREA on Mountain Island Lake is about 2 miles east of Lucia, on the right of a paved road. Lucia is located on NC 16 in Gaston County, south of Lowesville.



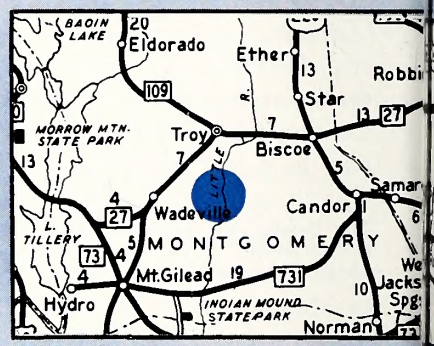
7 The **HIGHWAY 16 BRIDGE ACCESS AREA** is on NC 16 at the bridge over Mountain Island Lake, 12 miles north from Charlotte. Until the new bridge is completed in 1956, the area must be approached from the Gaston Co. side from Mount Holly and NC 273.



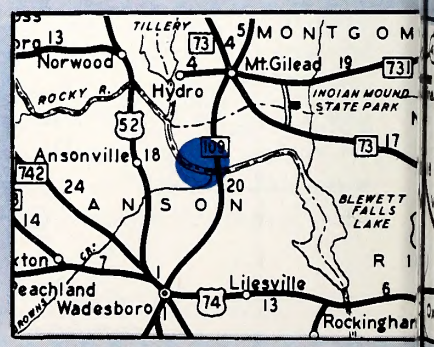
8 MOUNTAIN ISLAND LAKE ACCESS AREA may be reached from NC 16 by turning east at Shuffletown 9 miles north of Charlotte. Follow paved road east 4.4 miles to intersection, and there turn left onto paved road. Follow road about 3 miles to paved road turning left at a monument. Turn left and follow .8 mile to dirt road left. Dirt road leads to area.



9 HIGH ROCK LAKE ACCESS AREA is located the Abbott's Creek Arm and may be reac by following NC 8 about 5 miles south f Lexington. Past the Junior Order Home turn on the first paved road and follow past Abbo Creek to first dirt road, which leads to area.



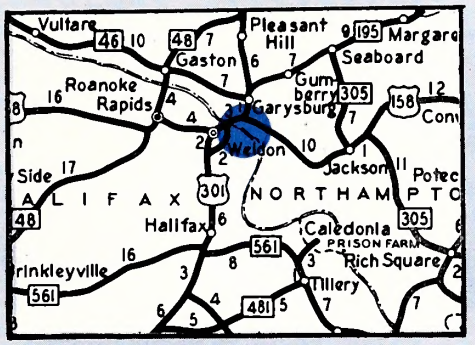
10 LITTLE RIVER ACCESS AREA is about 4 south of the courthouse at Troy in M gomery County. Follow the paved road past courthouse to the area on the right of bridge Little River.



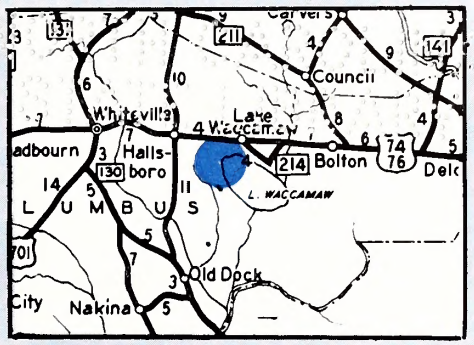
11 PEE DEE RIVER ACCESS AREA is locate NC 109 at the Pee Dee River Bridge, v is approximately 10 miles north of Wadesboro 10 miles south of Mt. Gilead, and is in A County.

SS AREAS

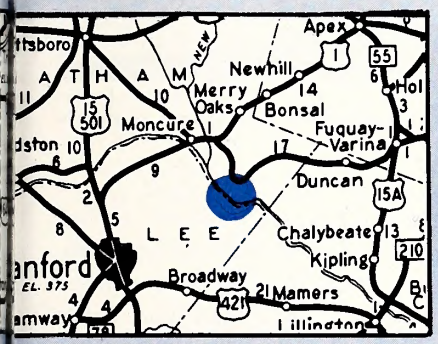
1955



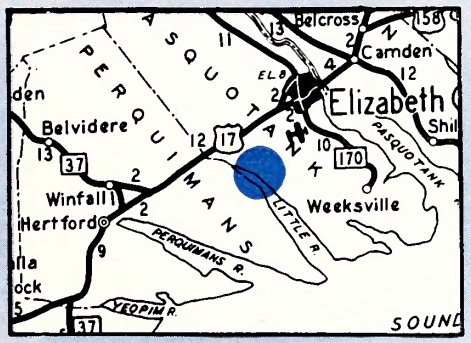
15 WELDON ACCESS AREA is located on the Roanoke River below the US 301 Bridge at Weldon, in Halifax County. The area is located at the Striped Bass Hatchery.



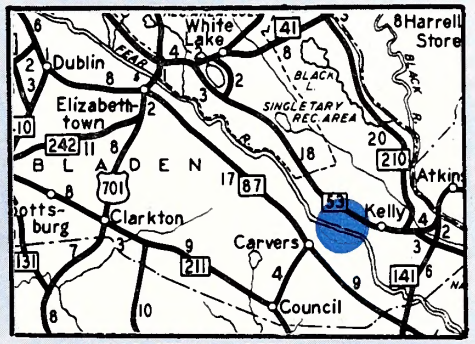
19 LAKE WACCAMAW ACCESS AREA can be reached from US 74-76 by turning south to the lake. At the lake, turn right and follow the paved road approximately 1 mile to the area, located on the left.



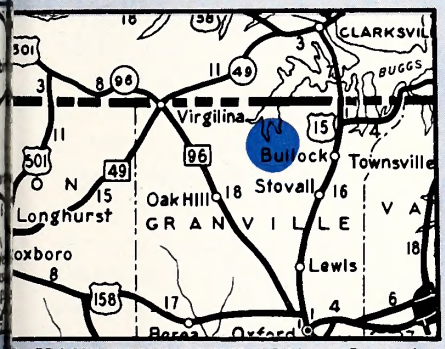
AVENT FERRY BRIDGE ACCESS AREA is on the Cape Fear River in Chatham County and be reached from Sanford by following US 421 3 miles to paved road left. Follow paved road 8 miles to river, where area is on the left of road at the bridge.



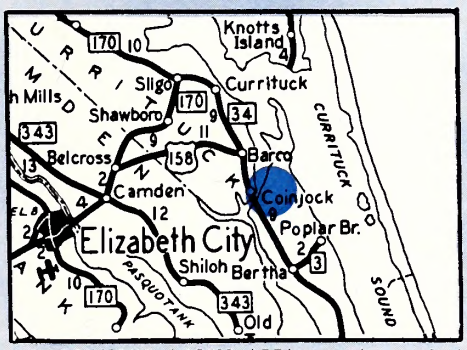
16 HALL'S CREEK ACCESS AREA is 3 miles south of US 17, on the right of a concrete bridge on a paved road which crosses US 17 about 9 miles north of Hertford and 8 miles south of Elizabeth City.



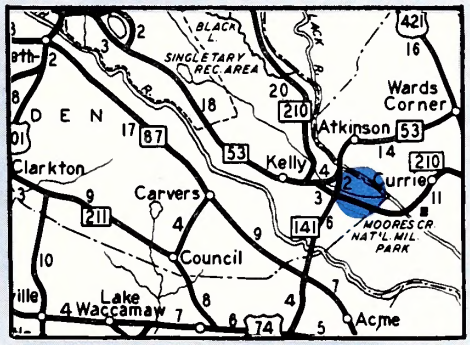
20 ELWELLS FERRY ACCESS AREA is on the Cape Fear River approximately 20 miles south of Elizabethtown at Elwells Ferry, between NC 87 and NC 53.



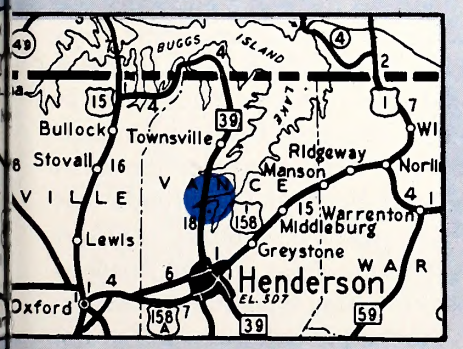
3 GRASSY CREEK ACCESS AREA on Buggs Island Lake may be reached from US 15 by ning left about 1 mile north of Bullock and owing dirt road for about 5 miles to bridge r Grassy Creek. The area is across the bridge the right.



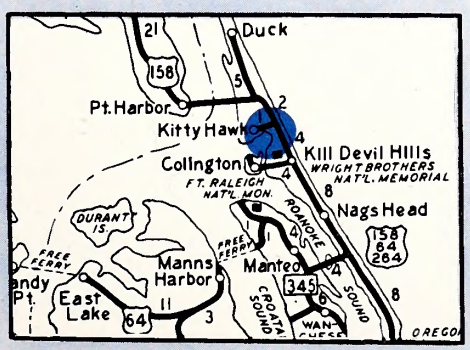
17 COINJOCK ACCESS AREA may be reached from Elizabeth City by following US 158 for about 20 miles east to the Inland Waterway Bridge at Coinjock. Turn left at the bridge and follow a dirt road for about 1 mile, to the area.



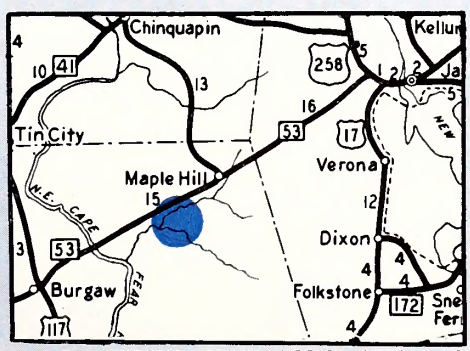
21 ATKINSON ACCESS AREA is on the Black River in Bladen County and can be reached by turning south onto the dirt road that turns off NC 53 at the Black River Bridge 30 miles southeast of Elizabethtown and 10 miles west of Atkinson. Area is 1 mile south of bridge.



4 NUTBUSH CREEK ACCESS AREA can be reached from Henderson by following US 1 orth for 2 miles to the Satterwhite Point Road rning left. Follow about 5 miles to a gravel road rning left. Follow gravel road left for 2 miles bridge over Nutbush Creek, where a dirt road right leads to area.



18 AVALON BEACH ACCESS AREA is situated on Colington Bay, approximately 4 miles north of the Wright Memorial and may be reached by a paved road turning west from US 158. The area is .5 mile from US 158.



22 The **SHELTER CREEK ACCESS AREA** is 9 miles east of Burgaw and 21 miles west of Jacksonville. Turn off NC 53 south onto a dirt road. The area is .3 mile from the highway on the left of the dirt road.

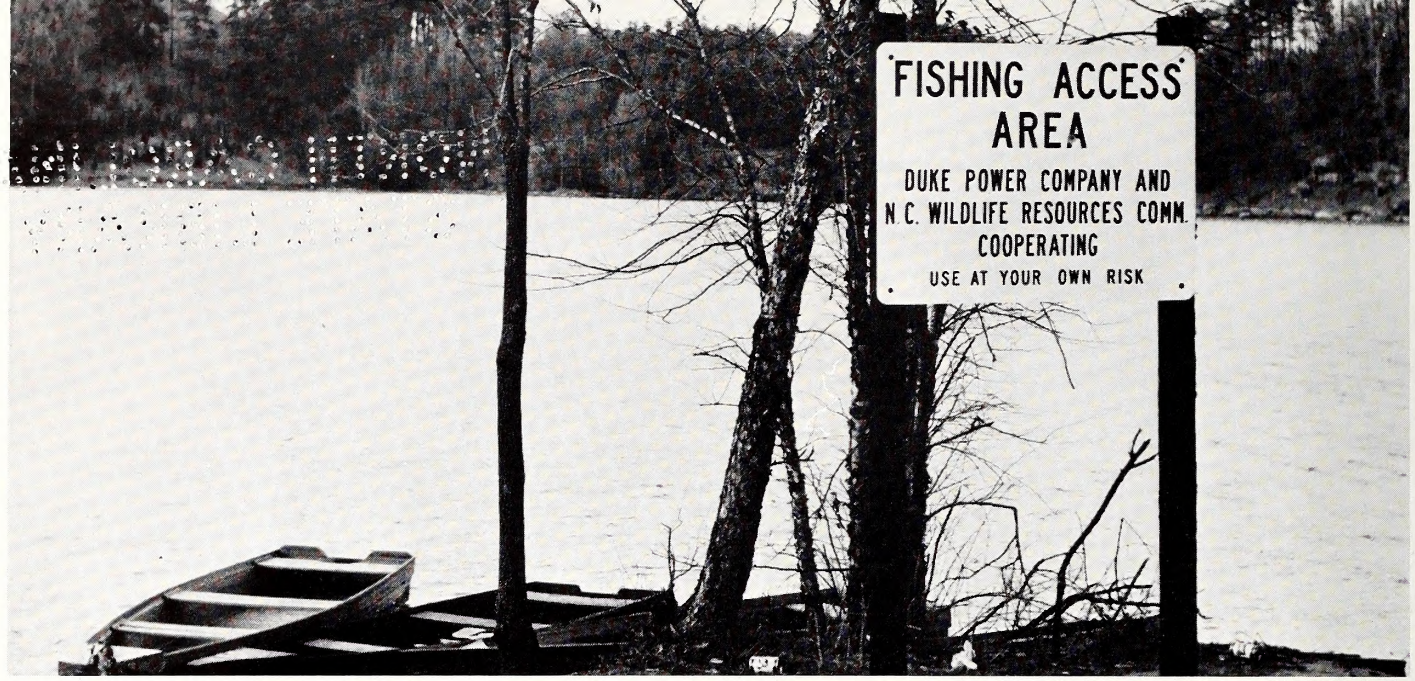


Photo by Jim Lee

This area, on Hickory Lake, is typical of the facilities developed on power reservoirs. Be on the alert for increasing numbers of these signs.

ACCESS AREAS

from page 11

range plans include acquisition and development of other areas in all sections of the State.

Facilities at the access areas include launching ramps and parking space for automobiles. Some of the areas have been further improved by local wildlife clubs and other sportsmen, who have constructed picnic tables, fireplaces, and other facilities for the benefit of themselves and other fishermen. Their interest means a great deal to the success of the program, and those who use the areas are asked to cooperate with them by keeping the grounds clean.

The angler with a boat has the advantage—he can readily go where the fish are—if he can get his boat into the water.

Photo by Jack Dermid

Most of the areas have been purchased by the Commission to insure the sportsmens' right to fish in public waters forever. Some are leased under long-term agreements, such as the property at Weldon. The Duke Power Company has permitted the use of eight areas on power reservoirs on the Catawba River, and has assisted, as a public service, in the development of them. The Carolina Aluminum Company is cooperating with the Commission in developing areas on High Rock Lake on the Yadkin River as a public service. The Coinjock Access Area, in Currituck County, has been leased from the U. S. Army Corps of Engineers and provides access to the Inland Waterway.

Additional areas will be opened as the program continues. The Commission, through the fisheries investigators in each district, is seeking areas wherever the need exists. At the present time, five areas are under development and will be in use in the near future. These areas are: East Lake in Dare County, Trent River in Jones County, South River in Bladen County, Black River in Sampson County, and the Cape Fear River in Cumberland County. Aquisition and development of the areas was originally financed entirely with State funds, but recently the program was given the necessary approval for Federal Aid, so that future areas will be financed in part by the excise tax on fishing equipment. Twenty-two areas have been established in only two short years. Eventually, it is hoped that more than a hundred sites will be developed, underscoring the Wildlife Commission's motto: "More sport for more people . . . equal opportunity for all."

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Public Hearings Set for Hunting Regulations

In a series of nine public hearings, one in each of the nine commission districts, the Wildlife Resources Commission will again give sportsmen an opportunity to express their views regarding the rules and regulations for hunting. At the meetings representatives of the commission will present a set of tentative rules for consideration. Following are the dates and places of the meetings:

May 24, 1955	District 9	Sylva	Courthouse	7:30 p.m.
May 25, 1955	District 8	Morganton	Courthouse	7:30 p.m.
May 26, 1955	District 7	Dobson	Courthouse	7:30 p.m.
May 27, 1955	District 6	Albemarle	Courthouse	7:30 p.m.
May 30, 1955	District 5	Graham	Agricultural Hall	7:30 p.m.
May 31, 1955	District 4	Elizabethtown	Courthouse	7:30 p.m.
June 1, 1955	District 3	Rocky Mount	City Court Room	7:30 p.m.
June 2, 1955	District 2	New Bern	Courthouse	7:30 p.m.
June 3, 1955	District 1	Edenton	Courthouse	7:30 p.m.

* * * *

Forest Fire Wildlife Damage Investigated

At press time biologists of the Wildlife Resources Commission were making a survey to determine the extent of damage to wildlife resources from recent severe forest fires in Eastern Carolina. The purpose of the studies is to determine whether damage to game was sufficient to curtail hunting activities this fall in burned-over areas. Part of the survey work may involve the use of the Commission's patrol plane.

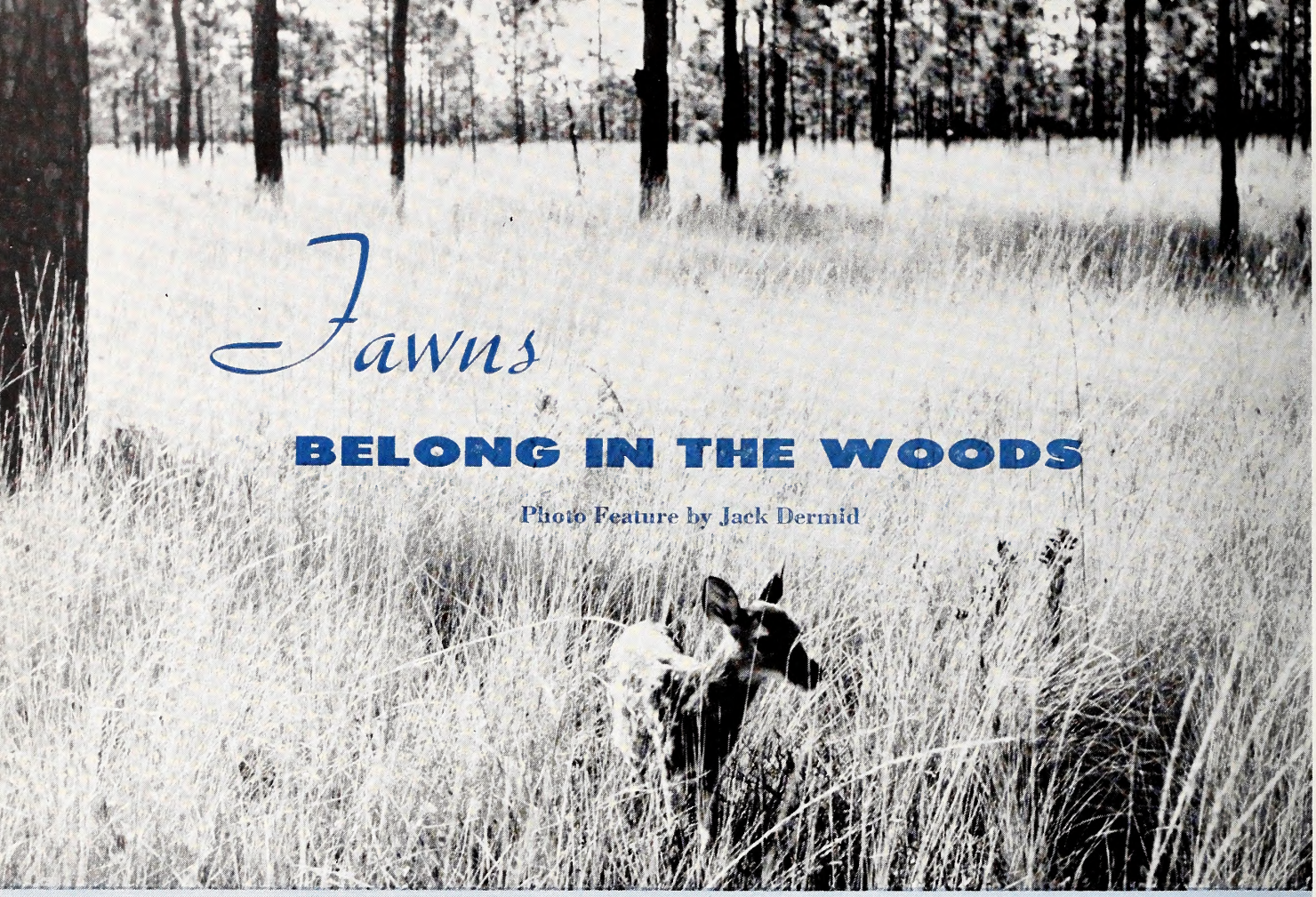
* * * *

Rockfish Hatchery In Operation

With the world's only rockfish (striped bass) hatchery in operation, the Wildlife Resources Commission again appealed to sport and net fishermen to bring ready-to-spawn rockfish to the hatchery. The Commission will again pay a price of $20.00 per million eggs. Spawners must be brought to the hatchery within 20 minutes after being caught in order for the spawn to be hatchable.

* * * *

Carl T. Durham, Box 111, Chapel Hill, writes us that he can supply wild turkey eggs. A card or letter will bring to our readers information on prices and shipping dates.



Fawns BELONG IN THE WOODS

Photo Feature by Jack Dermid

Few babies of the wild are endowed with the irresistible charm of the whitetail fawn. Its big lovable eyes and handsome coat combined with a look of helplessness have an appeal that has often led to its undoing. Many people, who are lucky enough to find a hidden fawn, cannot walk away and leave the youngster in the woods where it belongs.

It is commonly believed that a fawn left alone has been deserted by its mother. The truth is to the contrary, for it is natural for the doe to hide her newborn while she is away seeking food, water, or rest.

The whitetail fawn at birth is somewhat helpless, and the scarcely five pounds of body weight are too much for the gangly legs to support for long periods. It is two weeks or more before the youngster has gained sufficient strength to follow its mother about, and by necessity, its early days are spent in a secluded bed. The doe sneaks in to nurse and care for it at regular intervals.

The fawn is probably safest from predators when its mother is away. What protection could she give it from a roving pack of dogs? Alone, its white-speckled coat camouflages it wonderfully in the sunlight and shadow of the forest floor, and instinct tells it to lie low and still when there is indication of danger. The fawn lacks the strong scent of the doe, and self-hunting dogs might pass nearby without detecting it.

Every spring and summer, the Wildlife Resources Commission is faced with a crop of "orphaned" fawns because people picked them up in the woods. In most cases the doe was likely hiding only a short distance away when her youngster was stolen. It is a law violation to take home a fawn, but it is even more of a crime to take the fawn from its mother and natural home to commit it to a life among men, cigarette butts, and soft drinks. Many fawns that are picked up die because of improper diet, and those that grow up soon lose the cuteness of babyhood. They usually become pests and oftentimes become a menace to both children and adults. The feet of deer are sharp and capable of inflicting severe wounds. In the rutting season, "tame" bucks with antlers actually become dangerous. There are several cases on record in North Carolina of people being attacked by rampaging bucks.

Last year, seven fawns confiscated in the eastern part of the state were taken to the Holly Shelter Wildlife Management Area in Pender county and placed in the care of Ashley Manning, Jr., refuge manager. It was Manning's job to rear the fawns until they were old enough to take care of themselves. Then it was hoped they would gradually revert to the wild within the refuge. It takes a long time for hand-raised deer to lose their fear of man—some never do.

It was a time-consuming task to hand-feed seven fawns three times a day. To aggravate the situation, one fawn was so shy that it would not feed unless Manning caught it and held it in his arms. Besides twelve cans of milk a day, the growing youngsters consumed generous helpings of rabbit pellets, peanuts, beans, and other foods. Calcium and vitamins were added to give a balanced diet.

Two of the fawns had been badly maimed by dogs before Manning received them. Their wounds had to be treated regularly. And being highly nervous, the fawns would sometimes dash into the fence of their enclosure and suffer scratches and cuts.

Watching the fawns one hot August day, Manning commented, "If the people who picked up these deer could see them all together in captivity, their skinned faces and nervous condition, they would never molest the young of wildlife again."

Fawns belong in the woods!

By right, fawns are free animals of the wild, and they look out of place in captivity. It is a game law violation—punishable by fine or imprisonment—to pick up fawns in the woods.

Refuge Manager Ashley Manning (left) and G. W. Meeks team up to treat the wounds of a fawn while another watches curiously. Below: Closeup of one of the fawns that was maimed by dogs.

Manning's six-year-old son, Ashley III, had a big time helping to care for the fawns. Deer rapidly outgrow the cuteness of babyhood, however, and usually become pests, if not dangerous pets. Below: It's mealtime, and Manning offers his charges bottles by the handful.

PROTECTOR OF THE MONTH

P. B. Wilson

Mr. P. B. Wilson was employed as Wildlife Protector for Franklin County in 1937 and has held that position until the present time.

Mr. Wilson was born on a farm in Franklin County and attended high school in Louisburg. In recent years, he has completed courses in law enforcement and wildlife conservation conducted at the University of North Carolina.

Fifty-seven years of age, Mr. Wilson is married and now resides in the town of Bunn, North Carolina. He is a member of the Methodist Church.

It's the Law!

Question: Is it lawful for a person to fish with more than one pole at the same time?

Answer: While there may be a practical limit on the number of poles one person can efficiently handle when the fish are biting, there is no legal limit on the number of poles he may use so long as he keeps them under his immediate control. If, in order to attend one pole, he must leave another pole unattended and not within his immediate observation and control, it becomes a "set hook." Set hooks are legal only when baited with "cut bait." Cut bait ordinarily consists of pieces of nongame fish which have been cut up for use as bait. Under the regulations, game fish may not be used for bait except in certain waters where the creel limit has been removed on the species concerned.

ENFORCEMENT RECORD FOR FEBRUARY

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of February, 1955:

Persons checked	**18,901**
Prosecutions	**122**
Convictions	**107**
Convictions fined	**57**
Convictions not fined	**50**
Fines collected	**$1,095.00**
Costs collected	**734.31**

BASS

from page 5

growing season, and sometimes spawns the following spring. However, the growth of a bass, as with all fishes, is directly dependent on the water temperature and the available food supply. The adult bass is a fairly efficient predator, and will eat almost anything that it can catch and swallow. Primary items in the bass' diet include minnows, sunfish fingerlings, gizzard shad, aquatic and land insects, frogs, and even its own young. The average age of largemouth bass probably is less than five years and rarely exceeds ten years.

Importance

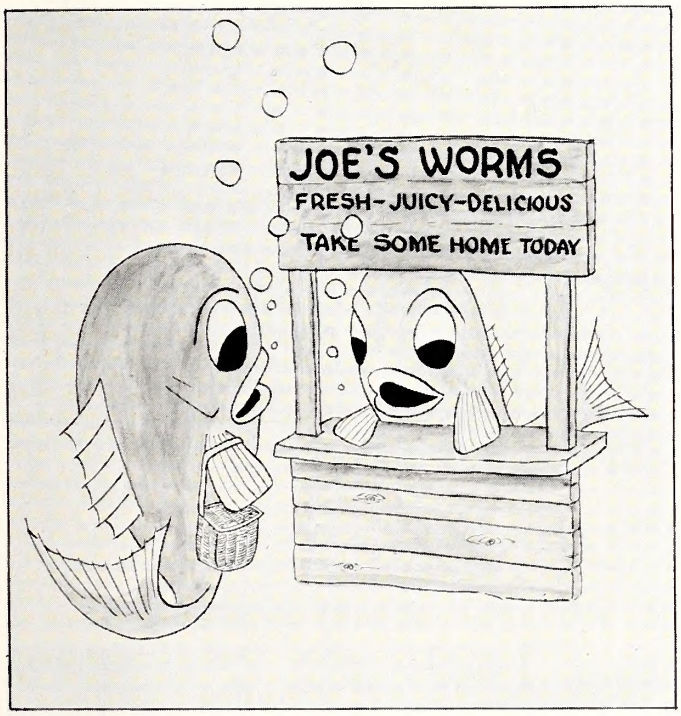
The eating qualities of bass are directly dependent upon the way in which the fish are dressed and the way the meat is cooked. The strong or "weedy" taste, that occasionally is frowned upon by anglers, is almost always eliminated by skinning the bass (see WILDLIFE IN NORTH CAROLINA, April 1951) and either filleting the fish or disposing of the belly meat and the layer of skin that lines the belly cavity. Practically no bones remain when the bass is filleted. This certainly enhances the eating qualities. Slow pan frying is preferable to either broiling or baking, although any of these methods is acceptable when properly done.

The largemouth bass is not a commercial fish in any state. Its sale is strictly prohibited in North Carolina, as is true with all game fish. It is a high quality sport fish, and probably provides more angling pleasure for more people than any other game fish in our waters. Practically any known method of angling will take bass on occasion; and, conversely, there are times when no fishing method will attract them. The wide variety of diet items make it practical to fish with almost any known artificial lure from the smallest artificial fly to the largest bait-casting plug. Spinning tackle for bass seems to be increasing in popularity, and the newer spinning lures are accounting for more and more bass each year. Popping bugs and streamers, and even small wet flies, are effective throughout the summer and make the fly rod a most practical weapon for bass. The old standby, the bait-

casting rod and large plugs, probably put more bass on the string than any other single method. The secret of mid-summer success with bass is to fish deep.

Bass fishing cannot be set down in any group of rules or sure-fire procedures, and this fact makes it the fascinating sport that it is. A complete knowledge of the habits of the largemouth bass, detailed information on the water that you are fishing, and infinite patience, all are requirements for successful bass angling for anyone from the novice to the expert.

How does North Carolina rate in national bass fishing statistics? A look at the March, 1955, issue of FIELD AND STREAM magazine will show that in the southern division of the largemouth bass section of the 1954 fishing contest, North Carolina placed five of the top six largemouth bass. Included was the first prize bass weighing 13 pounds 4 ounces. This should indicate to the most doubting skeptic that largemouth bass fishing in the Tar Heel State is just about tops in the country. In order to keep it that way, the largemouth bass will require sound management and additional study, plus cooperation from the fishermen and industry. The observance of reasonable regulations, and clean waters as a place to live, are absolutely essential.



Cartoon by Jim Lee

"Six big ones, please . . . can't go home with an empty creel."

The male hardhead catfish carries the eggs in his mouth until the little fish are hatched. Then continues to carry the little fish until they have reached a length of about three inches.

Fresh water clams spend the early part of their lives as parasites on fishes.

SPRING SONG

By R. I'On Lowndes

Founder and Custodian
The Flat Rock Bird Sanctuary Association

"When the winter's blasts are followed
By the gentle breeze of spring,
Our Country takes on new life
When the birds begin to sing.

"If our worries seem to crowd us
We will find that we are wrong
If we will only listen
To the little birdies song.

"Cheer up, Cheer up my friends
This happy praise we bring,
You fed us through the winter
So to you, we now can sing.

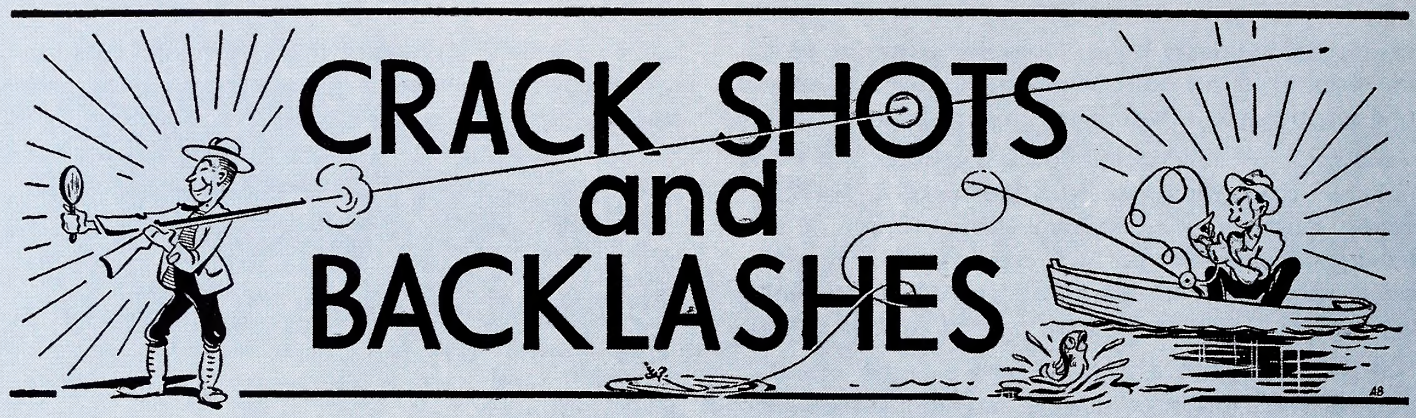
"*God* gave us our little birds
Oh, what a blessed thing;
He fashioned their bright costumes
And taught them how to sing.

"In spiritual concert
Directed by our *King*
So let us not neglect them
That they may always sing."

PUBLIC HEARINGS ON HUNTING REGULATIONS

Sportsmen are invited to present their views on hunting and trapping regulations for 1955-56 at hearings to be held in each of the Commission's districts. The hearings, as scheduled below, will be held in order that the public may participate in the planning of regulations.

May 24, 1955	District 9	Sylva	Courthouse	7:30 p.m.
May 25, 1955	District 8	Morganton	Courthouse	7:30 p.m.
May 26, 1955	District 7	Dobson	Courthouse	7:30 p.m.
May 27, 1955	District 6	Albemarle	Courthouse	7:30 p.m.
May 30, 1955	District 5	Graham	Agricultural Hall	7:30 p.m.
May 31, 1955	District 4	Elizabethtown	Courthouse	7:30 p.m.
June 1, 1955	District 3	Rocky Mount	City Court Room	7:30 p.m.
June 2, 1955	District 2	New Bern	Courthouse	7:30 p.m.
June 3, 1955	District 1	Edenton	Courthouse	7:30 p.m.



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Last spring, for the third consecutive year, the Wildlife Resources Commission went to bat for both sport and commercial fishermen who depend on rockfish for recreation and livelihood. After a series of long drawn hearings and meetings which finally ended in a committee room in the House Office Building, Washington, D. C., the U. S. Army Corps of Engineers agreed to provide water levels below Kerr Dam to allow the rockfish to spawn near Weldon.

Despite a few millions of words of testimony, countertestimony, argument and correspondence, the whole problem reduces to one basic question: Which is more valuable—a couple of hundred of thousands worth of electricity, or a natural resource worth at least a million dollars annually?

It may require an act of Congress to change the ground rules at Kerr Dam so that water can be supplied for rockfish propagation as a matter of course. It is pleasing to report that North Carolina's Senators and Representatives to Congress appreciate the importance of the rockfish industry and sport. It is pleasant to contemplate that these men will initiate Congressional action if such is necessary.

* * *

Well, it was fun while it lasted. It all started last winter when Engineering Division Chief Floyd Williamson brought in a miniature coke crate and suggested it would be a good gag to get a small fish to put on it and take a picture for WILDLIFE Magazine. Biologist Bill Ellis brought in the monster bream which tilted the scales slightly at 7/8 ounce. Jim Lee popped the picture, with a follow-up for last month's issue. The following comments came in from our readers, bless their hearts!

"Dear Sir:

"Your 'Monster' Bluegill can't be more than one inch long! Your magazine, however, is a real giant.

Mary Robertson
Asheville, N. C. "

"Dear Sir:

In reference to the bluegill, I don't believe it is heavy enough to even move the scales because I think the Coca-Cola crate it is on is a plastic toy model, possibly an inch or two long.

"I may be way wrong in my guessing so I would like to know its true weight.

Sincerely yours,
Pete Skinner
Dunn, N. C."

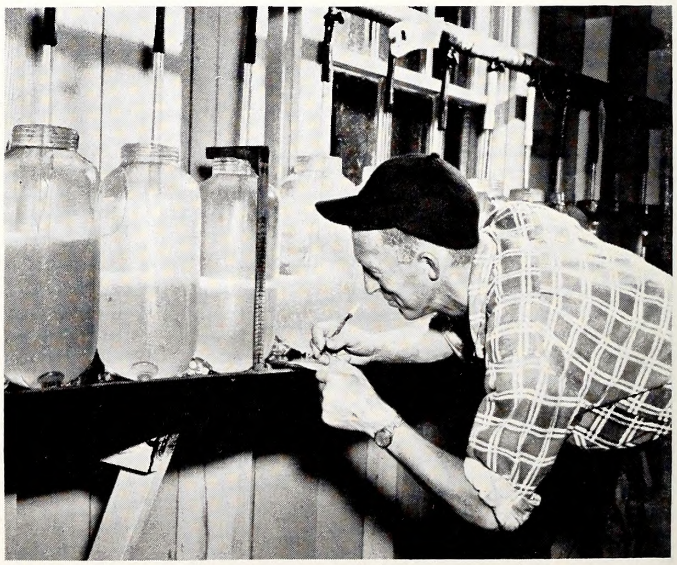
"Dear Sir:

"May I begin by saying I am a regular subscriber to your magazine and enjoy with interest each issue. Being a native tar heel from Chowan county I always enjoy what is being done by that state to improve hunting and fishing for its many sportsmen. Good luck in all of your many projects.

"In your March issue one of the fish biologists had a picture of the monster bluegill wanting its readers to guess the weight. If my figures are correct and my eyes are not fooling me its laying on a Coke crate that measures something like 3½ inches long by 2⅜ inches wide which makes the fish a little less than three inches, so I'll guess it will weigh one ounce.

Sincerely yours,
Luke Hollowell
Portsmouth, Va."

WELDON HATCHERY IN OPERATION



Striped bass are running again in the Roanoke River. The Commission's hatchery at Weldon opened on April 15, where biologists hope to better last year's record of 22,113,000 fry. Art Dickson, director of the hatchery, is shown taking egg measurements.

"Dear Sir:

"First let me say that I dislike "party poopers" and "spoil sports" too, but I can't resist taking a crack at this. It's in regard to the 'monster bluegill' caught by one of the Commission's fish biologists, (fish-y picture, page 22). Since I have never seen a "Coca-Cola" case made of, what seems in the picture to be plastic, I would guess that this masterpiece of "trick photography" contains a minnow, (oops, pardon me) rather a "monster bluegill" weighing about—(fanfare s'il vous plait)—1/8 ounce or less. Thanks for putting up with me.

Your ardent reader,
Jack Dunivant
High Point, N. C."

"Dear Sir:

"The bream in the March issue, I guess it to weigh 3 pounds and 2 ounces.

"My 9-year old son Alan guessed it weighed four pounds and he has caught lots of them. My wife thinks it weighs 3½ pounds.

Yours very truly,
Roy Moffitt
Ramseur, N. C."

"Dear Sir:

"The can you guess" fish on page 22, of the March issue of WILDLIFE IN NORTH CAROLINA is a small bream fingerling, weighing between 1½ and 3 ounces, if that much. The miniature coke case sure is convincing, sorry to have found out!

Sincerely,
Tony
Fayetteville, N. C."

"Dear Sir:

"In re. photo of 'Monster' bluegill on page 22. My guess is that the fish weighs an ounce or two. Looks like a clever bit of table top photography using a miniature 'coke' crate. Right?

Sincerely,
Joe E. Jackson, Jr.
Mount Airy, N. C."

"Dear Sir:

"About that picture in this month's magazine. It has a bream lying on a Coca-Cola crate. I think it isn't a monster. It is a baby bream that weighs about two ounces. It is lying on a toy plastic Coca-Cola crate. The fish is about three inches long.

Yours sincerely,
Jimmy Etchells
Raleigh, N. C."

"Dear Sir:

"Have been looking over the picture of that monstrosity or demon of the deep you have on page 22 of the March edition of WILDLIFE IN NORTH CAROLINA. The nearest I can figure to its weight without a real live model (which should be considered under bait limit) would be approximately 10 grams or just a shadow over 1/3 of an ounce. It should be about 6.5 mm or 2½ inches.

"Would you let us readers in on the actual size just to settle our curiosity?

Sincerely,
Howard W. Blackburn
Donaldson Air Force Base, S. C."

"Dear Sir:

"Trying to guess the weight of that bluegill in the March issue has me really guessing. It looks to me like it is resting on the coke bottles and not lying flat. My guess would be 1 pound, 13 ounces.

"I don't know when my subscription expires so enclosed is one dollar for two years.

Yours truly,
Jack Lampley
Norwood, N. C."

"Dear Sir:

"I am 12 years old and I figure the fish on page 22 weighs from an eighth to a quarter of an ounce, because the Coca-Cola case looks like a little plastic one and because the straw looks too big.

Sincerely,
Kathy Rapp
Reading, Pa."

"Dear Sir:

"Referring to the article on stray dogs in the March issue, I find Dr. Hines' suggestions far short of helpful in solving my stray dog problem.

"Though I have no dogs myself, many of my neighbors seem to keep from one to six apiece and, on top of that, my woods are apparently just right for people from a nearby city to dump unwanted pooches of all descriptions. Not a day passes without at least one unidentified dog hunting food here.

"The county dog warden, who works only part time, lives almost twenty miles away so, even if I could reach him promptly, a stray dog would be gone by the time he could get here. And only a fool would try to capture

BLOODHOUNDS TRAIL VIOLATORS

Photo by Ewart Ball

Violators on western Cooperative Management Areas have little chance when trailed by the keen noses of eight bloodhounds, one of which is shown with Supervisor Malcolm G. Edwards and Refuge Protector Wayne Wiggins.

LIVELY RAINBOW TROUT

Photo by J. M. Deaton

A few of the 65,000 angling-size trout released this spring are shown as they are stocked by Hobe Williams, Deputy Protector; Wayne Beard, Buncombe County Protector; Robert Pace of the Little East Fork community where these trout were released in the Pigeon River, and Robert Gillett, assistant at the Waynesville Hatchery.

some of these beasts without proper knowledge and equipment.

"Perhaps you can make suggestions as to what to do with a stray dog while waiting for the warden. Is there something that he would eat that would knock him out harmlessly?

"I had to shoot one big stray hound that attacked me a few months ago.

Yours very truly,
Name withheld by request"

Doc Hines didn't propose to solve North Carolina's stray dog problem, but his suggestions, if followed, would be helpful. Stray dogs are a real problem, and it will take time and the wisdom of a panel of Solomons to solve it. The dog warden plan developed by the Health Department for rabies control is a good one and ought to be supported. It will be of help until a more effective solution is reached. Meanwhile, dog owners should think twice before letting their pooches wander through the fields and woods during the spring game breeding season.

"Dear Sir:

"Enclosed is one dollar for renewal of WILDLIFE. I was glad to see the article about stray dogs in your magazine. Please try to push this all you can and I am going to do the same here in Beaufort County.

Yours truly,
Ashley Mizelle
Chocowinity, N. C."

Thanks, Ashley. We need more people like you to help out with the stray dog and rabies control problem.

Here is a chance for you beaglers and bunny hunters to express your views about rabbits. Apparently something is keeping our rabbits from living up to their reputation of prolificacy:

"Dear Sir:

"I have been reading "Wildlife in North Carolina" about three years. I find it very interesting and educational. Mr. Ronald McCarter's contribution to the March issue really hits the spot, and I would like to ask one question, where are the rabbits? Or where were they last hunting season? I can see one now occasionally but in open season it was hard to find a track.

"This question has been asked me many times for the past two years and I thought I was giving a good answer when I advised that there are plenty of them but they are too smart for man or dog. Many hunters have given up their rabbit dogs, (sold out and gave up) because rabbits are too scarce for a good hunt. Last year I walked about ten miles with three good dogs and jumped two rabbits. This season I walked about five

STANLY COUNTY WINNERS

Photo by Jim Lee

Members of the Yadkin Valley Field Trial Club are shown with their winning dogs in the Members' Shooting Dog Stake at the trial held in Stanly County March 25-26. Left to right are Nell, with Henry Culp of New London; Star Fire, with Henry Ford of Hickory; Wag, with Joe Cresswell of Badin; and Bob, with Frank Marbry of Badin.

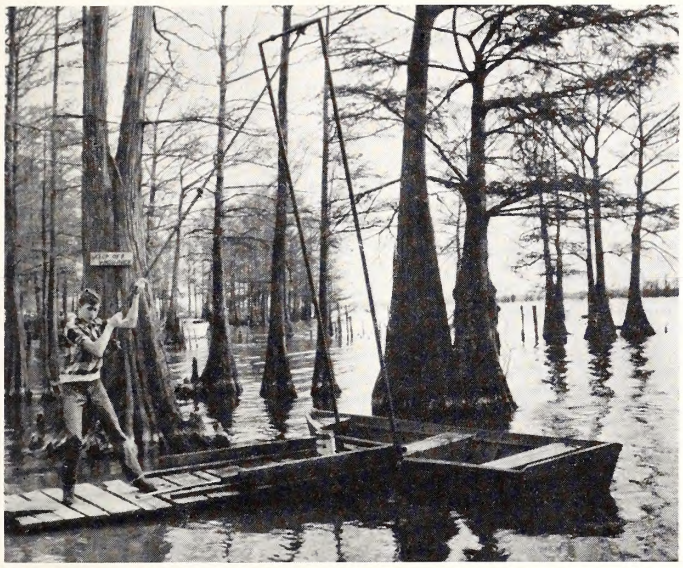
miles on three or four separate occasions and jumped four on the same land that was infested with them a few years ago.

"Some hunters say poisoning cotton has killed off the rabbits. I know foxes and self-hunting dogs have been a menace for the past few years but a few seem to survive. This past season was the worst I have ever known. I don't shoot birds because they always frighten me when they get up close to me. This causes me to forget I have a gun. Now it seems the birds have disappeared along with the rabbits. I can hunt now in perfect peace, can bag about as much rabbit with a grit-shooter as I can with a gun, since there isn't any to shoot.

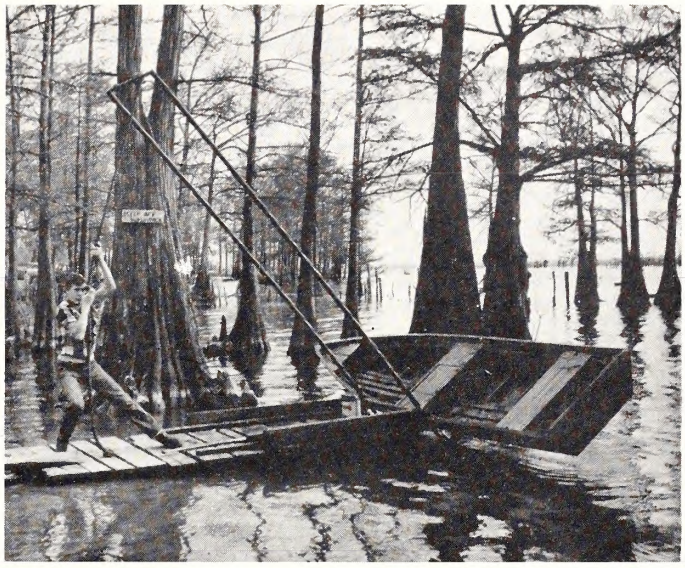
"Our small game hunters have been debating this for the past two years and I think the final decision is that if something can't be done to restore the game there will not be any need to keep our dogs, paying vaccination fee and taxes on them, or buying hunting licenses to shoot a few sparrows.

"This is a serious problem with us, while I am studying what the experts say about it I want to hear from the average small game hunter like myself.

J. R. Scott
Halifax, N. C."



A piece of rope, lengths of scrap pipe, and a fulcrum on the end of a pier or other location are all the materials needed.



Pull the rope and the heaviest, water-filled skiff can be tilted over with ease. It beats bailing ten to one.

Tip From Louisiana

AN EASY METHOD FOR CLEANING BOATS

Photos by Claude Gresham

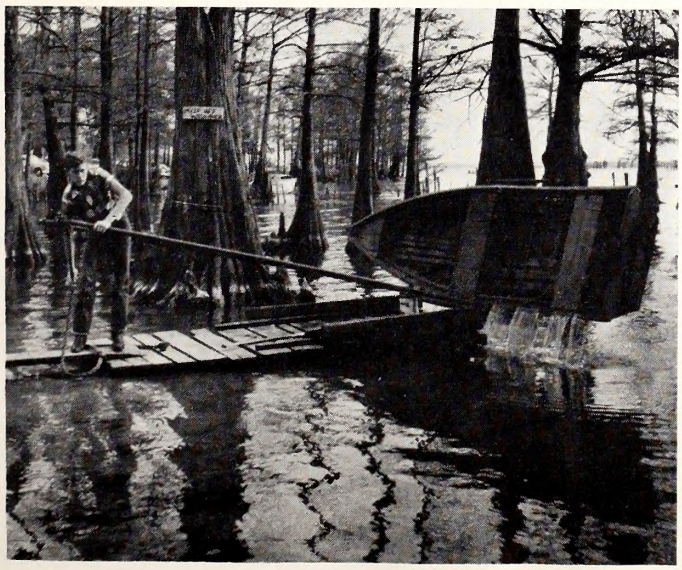
From Louisiana Conservationist

Have you ever gone down to the lake to find your boat full of rain water or the bottom caked with mud and trash? It's always disgusting to take time to clean out a boat when the fish are biting in the next cove.

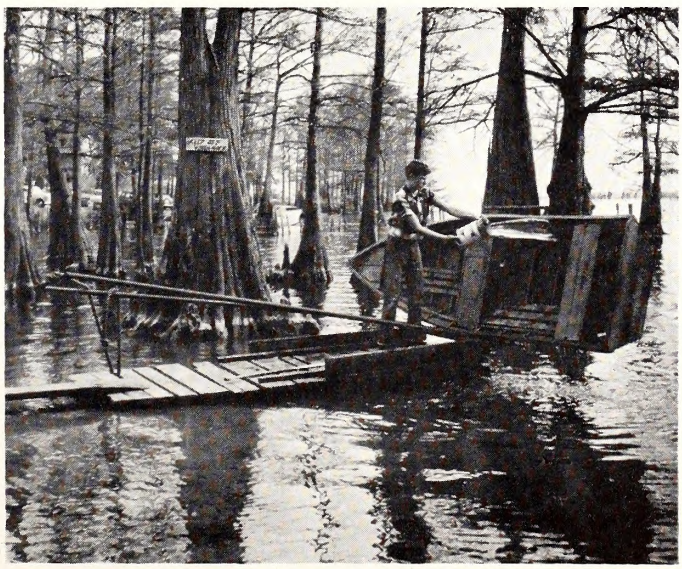
What is more disgusting is to go to a public dock to rent a boat and have the operator leave another fisherman's mess in the skiff for you to clean out.

If filthy boats bother you, then this Louisiana boat cleaning rig should make life along stream and lake a bit easier. It can be constructed from scrap metal at nominal cost. And why not show this page of pictures to the operator of your favorite boat dock? Maybe he will take the hint.

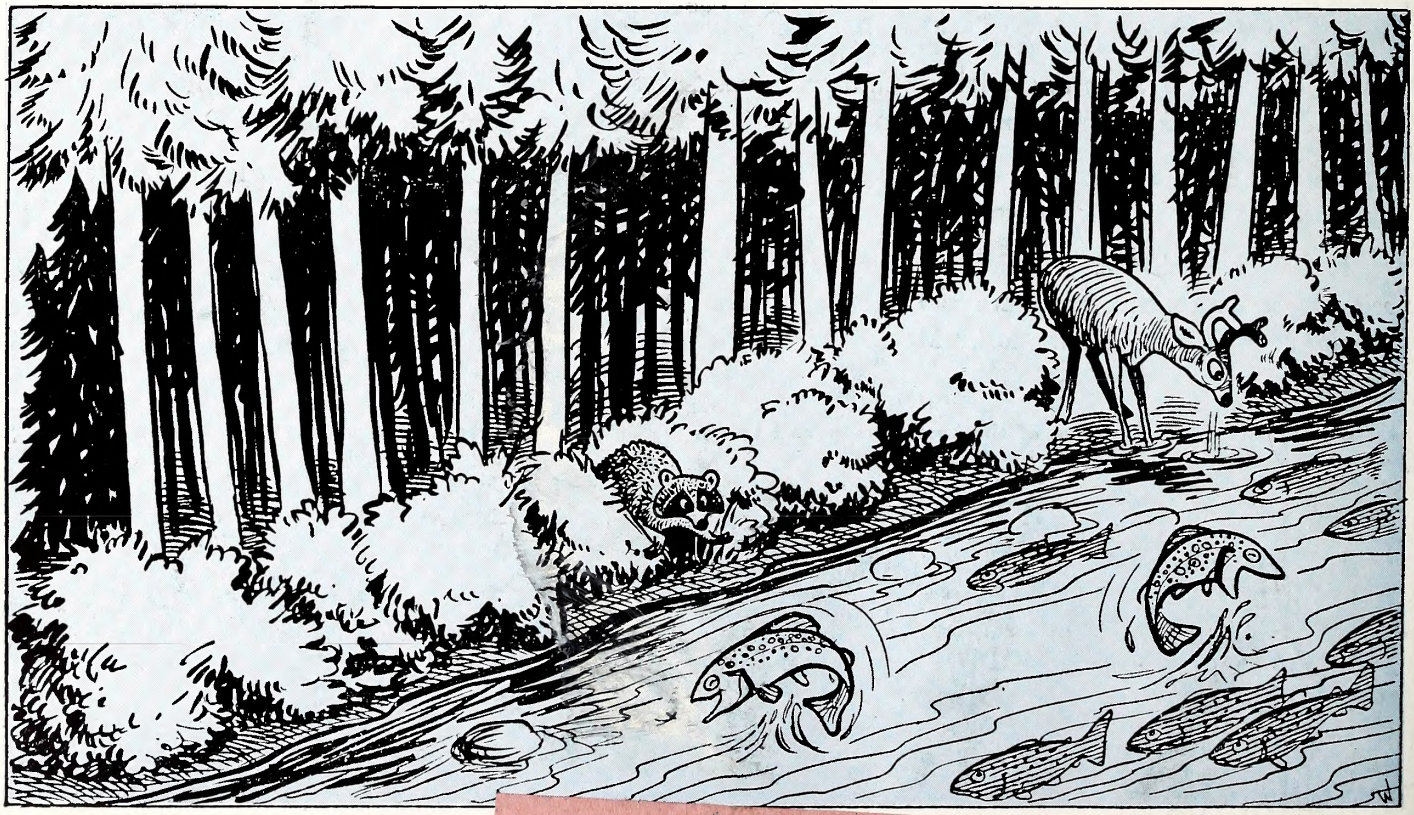
Out goes the water! The bottom of the boat is supported by pipes attached at right angles to the lever handles.



With a bucket or two of water, the boat can be quickly cleaned of mud and trash. Let's go fishing!



Poor Forestry—Poor Fishing



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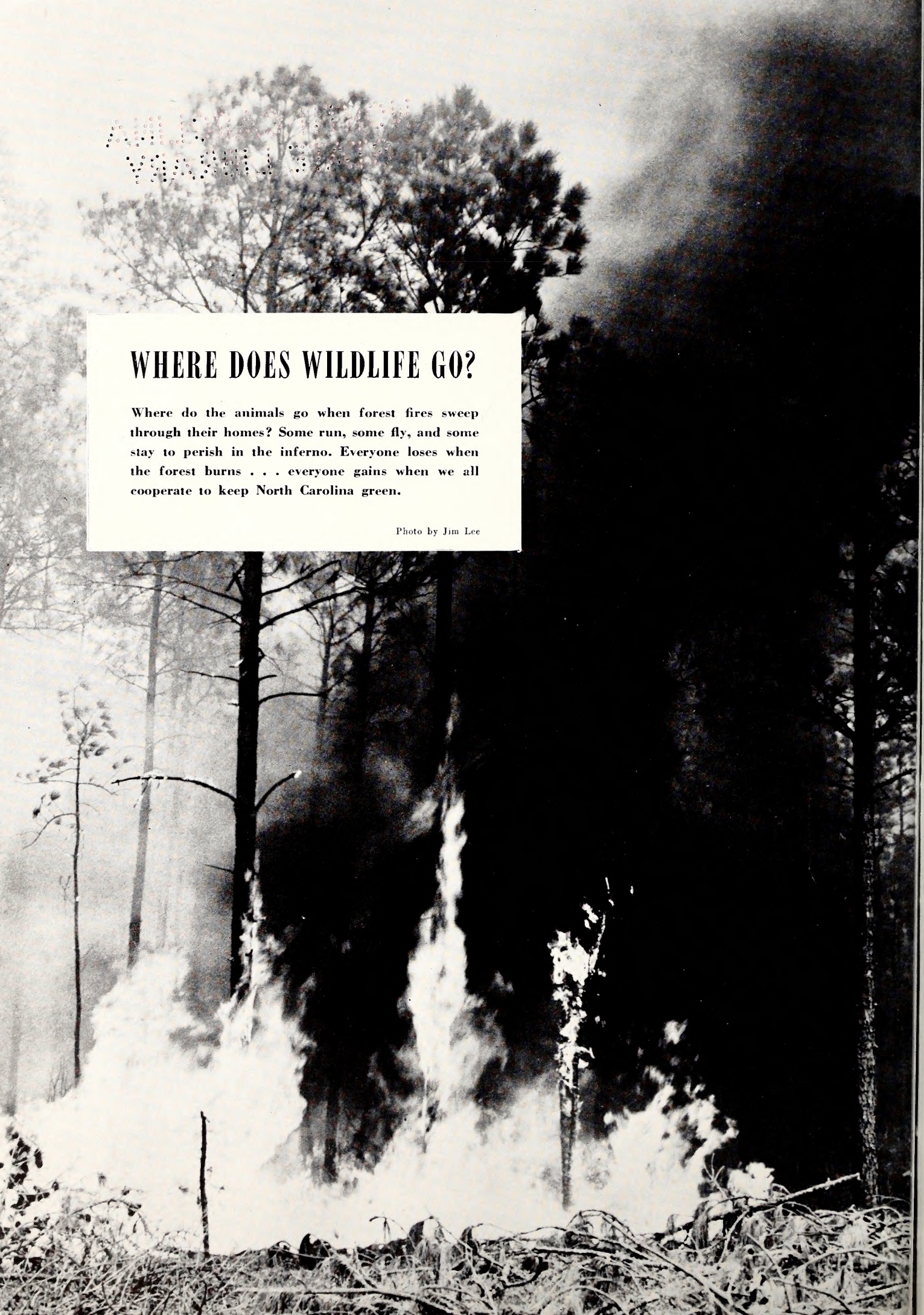

WHERE DOES WILDLIFE GO?

Where do the animals go when forest fires sweep through their homes? Some run, some fly, and some stay to perish in the inferno. Everyone loses when the forest burns . . . everyone gains when we all cooperate to keep North Carolina green.

Photo by Jim Lee

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

LUTHER H. HODGES
Governor

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COVER

One of our most important game birds, the mourning dove is also a favorite songbird of those who recognize his plaintive note which gives him his name. Water-color by the late Jacques Dement.

☆ ☆ ☆

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Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Jim Lee ..... *Editorial Assistant*
Anne Taylor ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all materials published.

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Fishy Courts
CAN HURT YOUR FISHING

by Louis Corbeau

Reprinted from *The FISHERMAN Magazine*

Ninety-nine percent of the judges in America do a good job. But in some places in the forty-eight, the justice of the peace is the worst enemy of good fishing! Let me bring you up to date on a few happenings.

Item: In Iowa, a conservation officer was giving a talk on law enforcement to a group of eighty-five 4-H youngsters assembled on the bank of a river. Within plain sight, a group of men were spearing fish in a spring spawning run, in direct violation of the Iowa game law. With eighty-five witnesses, the officer arrested the violators and brought them before the local magistrate. Mr. Law held court in his own living room, in his bare feet, and without bothering to remove his corncob pipe. He refused to hear any of the witnesses, on the grounds that, "You gotta be 21 to testify in my court." Despite the evidence of a washtub full of fish bearing spear marks and despite the eyewitness account of the officer, the four poachers were found not guilty for "lack of evidence."

Item: In North Dakota, a warden spent four nights in near freezing weather hiding on the snow-covered bank of a stream, before he finally caught three men who were operating a fish trap which blocked off the entire river and prevented any spawning fish from proceeding upriver. He caught them red-handed with 400 pounds of northern pike (on which species the season was closed) and in possession of the fish trap. The Judge's reaction was, "Don't bother this court with such unimportant details. Case dismissed."

Item: In a Midwestern state famed for its fishing, there is a law requiring all vendors of bait minnows to be licensed by the State Conservation Commission. Purpose of the regulation is to provide the state with a tool to prevent the introduction of undesirable species of fish through their use as bait.

In a nearby lake, all fish life had been chemically removed and the lake had been restocked, at a total cost of $9,000. One warden apprehended a man selling bait without a license. His bait tanks contained baby carp!

The nearest justice of the peace proved to be a man who thought it absolutely ridiculous for the state to license the sale of minnows. Faced with the fact that the law was on the books, he smiled at the whole silly business and fined the offender one dollar, although the minimum prescribed by law was twenty-five dollars. The next year carp began to show up in the lake, escaping from minnow pails filled at unlicensed vendors nearby. There is now no sport fishing left in the lake, which has been completely overrun by carp.

Item: In Minnesota, wardens apprehended a car leaving the site of a nocturnal fish-spearing excursion

How Fishy Are

by W. C. Bumgarner

Fortunately, North Carolina is not plagued with a high percentage of non-convictions in game and fish law violations. The number of convictions obtained out of the total number of prosecutions brought each month runs consistently better than ninety percent.

While this result is partly attributable to the higher caliber of officers produced by the Wildlife Commission's law enforcement training program, the much-maligned Justice of the Peace fee system, under which collection of the fee is dependent on conviction of the accused, must also be considered a contributing factor.

But even though our conviction record remains high, there are other facts which evidence a somewhat lackadaisical attitude on the part of the North Carolina judiciary toward game and fish law violations, and particularly the latter.

During the calendar year of 1954, the number of convicted violators on which no fines were imposed ran from a low of 35.45% during the hunting season month of January to a high of 57.81% during the fishing season month of July. This means simply that over one-third of the convicted game law violators get off without paying a fine while over one-half of the convicted fish law violators are so graced.

Other evidence that some of our courts do not consider game law violations very serious, and that they consider fish law violations even less serious, lies in the fact that, in 1954, the convicted violator in January paid an average fine of $9.59—which is low enough—

during the spawning run. The trunk of the car was filled with huge female pike, averaging fifteen pounds apiece. The trunk also contained four fish spears. The season for taking pike by any means was closed, and even if it had been open—the men had no tackle with them.

In court, a lecture was given. But the judge did not lecture the defendants; he directed his remarks at the warden. He was of the opinion that the method of taking was of no importance, as long as the law allowed fish to be taken! He also felt that it made little difference whether they caught the fish now or two weeks from now, when the season was open! He summed up his dissertation by saying, "Whether a fish is taken legally or illegally cannot have any influence upon the fish supply in the lake!" Then he fined the grinning malefactors five dollars apiece and actually returned their spears to them. His attitude was that the whole affair was of no importance.

When he left the court a few minutes later, the judge found the warden waiting for him. The officer asked him to come and look at the pile of ripe fish eggs which had oozed out of the trunk full of dead spawners.

This pile of pale yellow eggs was over a foot deep and covered an area six feet by four feet! It contained over 7,000,000 pike eggs which would not hatch because violators speared the females. There will be seven million less fry in that lake because of the actions which the judge described as unimportant. It is little wonder that the warden's face was pale with anger, and it is no wonder that the judge averted his eyes from those of the officer.

How do these shenanigans hurt your fishing? Think about it a minute. If a warden works hard to protect your fishing and then has his work thrown away by a judge who says, "It isn't important," will that warden work as hard in the future to try and protect your sport? Not if he is human, he won't.

More than likely, that warden will concentrate his law enforcement patrol work in other areas where the courts are more honest. As a result, the entire spawning run of a stream may be lost—and fishing permanently lost to that stream.

In another part of that same state, the warden caught a man loading fish from an illegal trap into his car. The local judge levied a big fine and confiscated the car! With that kind of justice, the warden finds his job much lighter as the violators pull in their horns. Faced with the fact that the court means business, most violators cease operations. And then wardens can become helpers rather than snoopers.

The judge who thought a bait vendor's license silly took away the only legal way of regulating bait sales. As a result, another fine lake is again full of carp, and you are out of a fine fishing spot, and $9,000 of your license money was wasted. Who is to blame? A fishy judge!

In one Southeastern state, a flying squad of enforcement officers made a wholesale housecleaning on unlicensed fishermen, taking seventy-eight culprits on one lake in one day. They got off easy—with an average fine of ten dollars. Evidently this didn't help matters much, for one month later a similar sweep on the same lake again bagged fifty-six unlicensed fishermen.

In one of the neighboring states, a similar roundup of unlicensed fishermen went before a magistrate made of sterner stuff. Thirty-eight of them were assessed an average fine of $45.00 and costs. One month later you could not find an unlicensed fisherman in the county no matter how hard you searched for violators.

Remember, every unlicensed fisherman is a shirker who rides on your back. You pay your way; he sneaks in. If he paid his share, the state could do more to provide good fishing. But a lot more men get by without a license if the fine meted out by the judge is hardly more than the cost of the license! But that is solely in the hands of the judge!

•——————See COURTS Page 19

...orth Carolina Courts?

while in July he paid an average fine of only $5.54—which seems hardly worth the trouble of going to court.

Luckily, this "average" business does not mean that all of our courts are just "average" or that all of them take a dim view of our fish and game laws. There are a good many judges in each of the trial court categories, from the level of the justices of the peace through the recorders' courts to the Superior Court, who consistently impose substantial fines or even an occasional jail sentence on convicted game and fish law violators.

On the other hand, there are far too many judges, particularly among the magistrates and recorders, who make a practice of freeing the defendant on payment of court costs and either an inconsequential fine or no fine at all.

In a few cases where no fine is imposed the subject just isn't mentioned, but in the great majority of such cases the gimmick is worked with the same practical result by assessing a fine and then suspending the same on payment of court costs and on imposing some proscription on the defendant's future behavior.

Even where a statute commands the imposition of a substantial minimum fine for what the legislature considers one of the more serious violations and the defendant pleads guilty to the charge that he has committed that violation, the judge may set the defendant free on payment of a smaller fine or even no fine at all. There is no legal machinery in existence that can be utilized to compel the judge to comply with the statute, for in such a case the defendant does not desire to take an appeal—and the State cannot.

It's Nothing To Get Excited About

by Jim Lee

Snakebite isn't to be treated lightly, but this actual experience shows that it need not result in serious injury

"Hey, the little beast bit me!" The words were spoken so calmly that it was a moment before I realized what he had said. I put my camera on the desk and walked over to George, who still held the squirming copperhead in one hand as he peered at the two small holes in the flesh of his other hand. "Put him back in the jar, George, before he bites you again," I told him with less excitement in my voice than I felt. The copperhead was less than a year old, and less than a foot in length, but the clear poison oozing from the wound was as dangerous as that from an adult snake.

Here it was—a case of snakebite. Ever since I had first studied first aid as a Boy Scout, I had practiced, demonstrated, and lectured on treatment of snakebite. Any outdoorsman, whether hunter, fisherman, or simply a lover of the woods and streams, should be prepared to cope with the situation that I found myself in. Nowhere in North Carolina is one far removed from slithering reptiles of some species. Among the native snakes are seven that are poisonous to some degree.

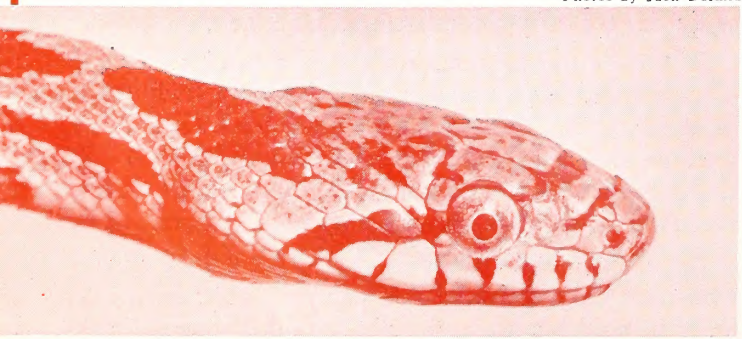
George was not particularly worried about his oozing hand. He had more than a passing familiarity with snakes, having spent a summer working with them in a zoo. Before handling the copperhead that had just bitten him, he had handled more than three hundred others, including adults as well as youngsters. He knew from personal experience that snakes seldom bite unless annoyed. He also knew that the bite of the copperhead, although painful, is seldom fatal. A small child bitten by a copperhead can die; a grown man, if bitten by a small snake, is not going to die. Neither George nor I, however, had ever seen the effects of snakebite, and we had no intention of ignoring the poison.

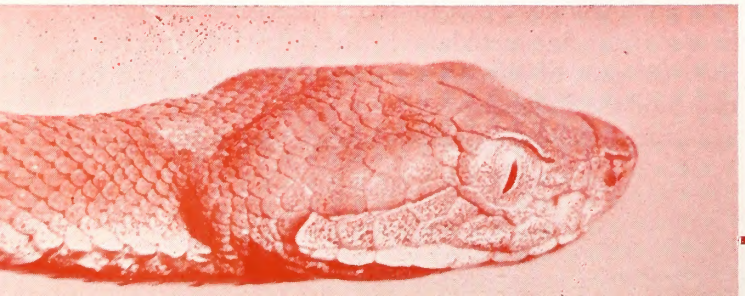
The snake's venom, carried in sacs above the fangs until injected into a victim as with a hypodermic needle, is present even in a snake only hours old. The venom of poisonous snakes of the Pit Viper group does its damage to the circulatory system of the human body. The worst thing that someone bitten by a snake can do is to become excited, as excitement increases the speed with which the poison reaches the heart. Likewise, certain time-honored liquid antidotes should be avoided at all costs. Potassium permanganate, once recommended as an injection, is no longer included in snakebite kits because of its stimulating action on blood circulation.

To keep the venom from reaching his heart we tied a tourniquet below George's elbow, effectively stopping the flow of poison to his heart. George's face showed that he knew what was coming next, and he didn't like it. The only razor blade that I found was rusty, however, and I was reluctant to start slicing his hand around

Compare the eye of this young black chicken snake (above) with that of the copperhead below. Vertical eye slits spell trouble for the unwary outdoorsman.

Photos by Jack Dermid





First aid for snakebite begins with the tourniquet shown here on the victim's forearm. Then lance the wound with a sharp knife or razor blade . . .

Photos by Jim Lee

the two holes. Had we been miles from a doctor, he would have had to grit his teeth while I opened the wound so that the venom could be removed. Fortunately, we were only a few blocks from a doctor's office, so with a belt tied securely around his arm as a tourniquet we sped to the doctor. A telephone call had alerted him. While the doctor prepared an injection of anti-venin, his nurse applied an ice pack to George's hand, which had already begun to swell. The ice pack treatment, a recent development in first aid for snakebite, serves to reduce still further the circulation and at the same time reduces the swelling.

By the time the injection was ready, fifteen minutes had elapsed. Before proceeding, the doctor released the tourniquet, since permanent damage can result if circulation is stopped for more than fifteen minutes. After a minute the doctor replaced the tourniquet, using instead of my belt a length of rubber tubing. In an emergency, anything flexible, from a handkerchief to a honeysuckle vine, can be used as a tourniquet. He then began pumping the anti-venin into the area around the wounds. The probing needle didn't hurt George as much as it would have if the wounded hand hadn't been numb, but ever since ten minutes after the snake had bitten him the hand had been completely without feeling.

After an hour, during which the ice pack had been kept on the hand, George was as good as new. His hand was still slightly swollen, but not enough to keep him from going to a dance that night. After that experience, however, I never could persuade George to pose for my camera with a live copperhead in his bare hands.

This article is not intended to frighten people out of the woods. More people die annually from falling in the bathtub than die from snakebite. However, each year some people are bitten. Of those who receive proper treatment, less than one in thirty dies. If you are bitten, remember that. Also remember that the less excitement, the better chance of survival. Under ordinary circumstances a person bitten by a poisonous snake has ample time to reach a doctor. First aid administered while the victim is on the way to the doctor makes the doctor's job easier and increases the victim's chances of recovery. If possible, kill the snake. Identify it and the doctor will know what kind of anti-venin to use. Apply a tourniquet between the wound and the heart. If the doctor is some distance away, lance the wound with a knife or razor blade and squeeze or suck the wound to increase the cleansing flow of blood. Don't suck on the wound, however, if you have an open place in your mouth, as this can cause trouble too. If practical, notify the doctor so that he can be prepared. In remote areas, anticipate snakebite and equip yourself with a snakebite kit. A pocket-sized kit, costing only a dollar or so, should be in the packsack of every outdoorsman who ventures off the beaten track.

The bite of a non-poisonous snake should not be regarded lightly. Tetanus, or lock-jaw, is often carried by snakes and other animals, and a person bitten by any animal should have an anti-tetanus shot as soon as possible. The bite of a non-poisonous snake leaves a horse-shoe pattern; the bite of a poisonous snake, except for the coral snake, leaves two holes. The coral snake, relatively rare in North Carolina, must chew its victim. A member of the Cobra group, its poison affects the nervous system. Beware of any brightly-banded snake, since the coral snake is extremely dangerous. Other poisonous snakes found in North Carolina, all members of the Pit Viper group, include the copperhead, or highland moccasin; the cottonmouth, or water moccasin; the banded or mountain rattlesnake; the canebrake rattlesnake; the pigmy rattlesnake; and the diamond-back rattlesnake.

. . . and remove as much of the venom as possible with a suction cup or with your mouth. An ice-pack should be applied if possible, while the victim is hurried to a doctor . . .

. . . who will inject anti-venin into the area of the bite. Anti-venin must be kept refrigerated until used. Proper first aid assures the victim a minimum of discomfort.

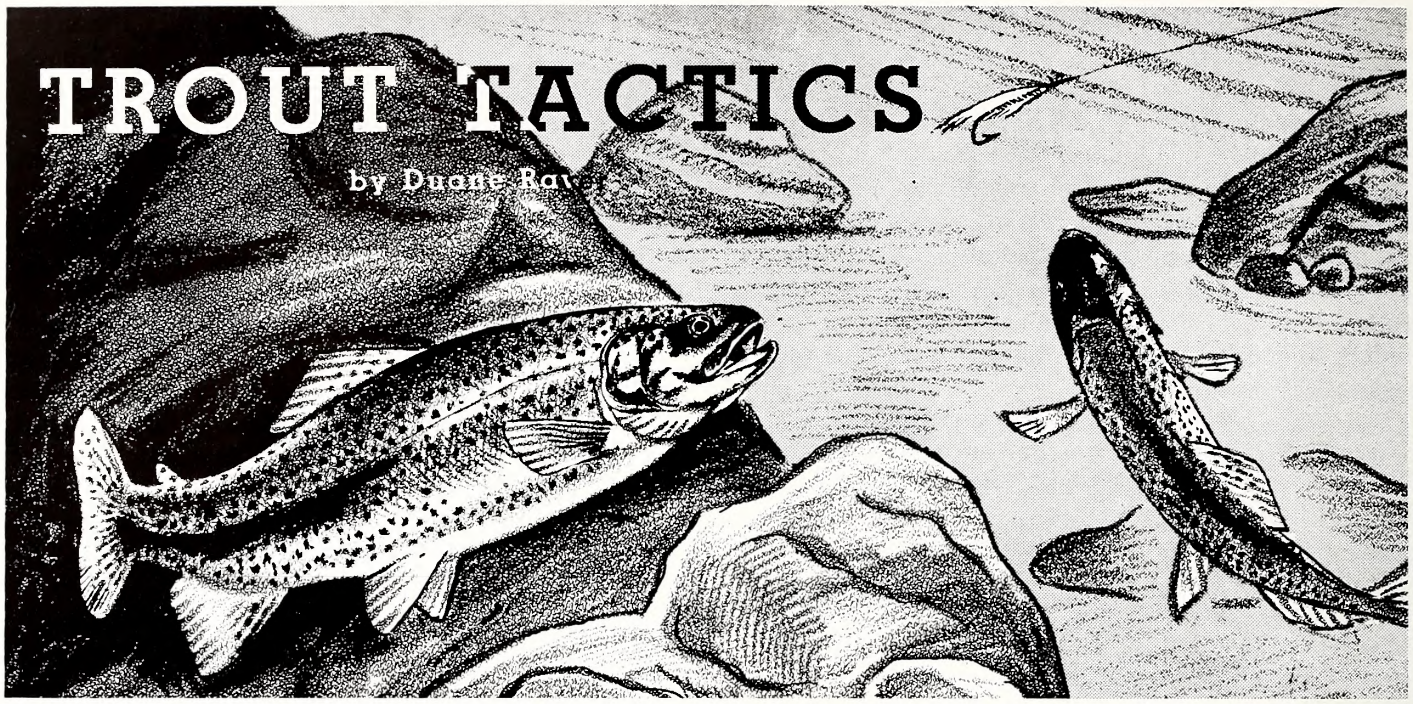


Illustration by Duane Raver

The stream sparkled and bubbled its way through laurel thickets and rolling squares of sun-lit pastures and finally settled down to a meandering trip along cool, shady, evergreen and hardwood glades. Its chill penetrated my hip boots as I stepped cautiously into a flat run below a backroad bridge and began studying the slick, white-flecked water. The section that could be fished from the spot I occupied was nowhere more than 14 inches deep and maintained a brisk speed. Although the bottom was strewn with grapefruit-sized rocks, little cover was available for a hiding trout. Most of the stretch was bathed in bright sunlight and it was perfectly obvious that not a single fish was anywhere around. The water was clear amber in color and took on a rich green where the overhanging bushes and trees offered their shade. Thus, the conclusion that this area was vacant of trout was a reasonable one at first consideration. Why even make a cast?

But I did. And even a second cast, reaching for the slightly undercut bank a few yards upstream from where I stood. As the line bowed and the tiny dancing spinner backed by a bucktail swung downstream, I caught the flash of silver that betrayed the rainbow as he nailed the lure. As he somersaulted amid a shower of sparkling spray, I didn't have the opportunity to question myself as to where he came from in that "barren" stretch of water! Speed and acrobatics made up for strength and power as he went through his bag of tricks. Even as the rainbow lay in the water at my feet, he twisted and darted with all that he had. Only when he rested in the fern-lined creel did I have the time to reflect on why the rainbow was in such a relatively unlikely spot. This trout hadn't read the books (or perhaps I hadn't read the right ones) and several of his relatives helped prove the "exception to the rule" during this same day's fishing.

All of which leads to the point of this article: try the unusual, the different, the untried in your trout fishing. It will pay off in surprises and more fish. Hit the areas that don't appear to be "fishy" as well as those sections that look good. Following the "rules" of angling will provide fish all right, but in reasonably heavily fished areas when the conditions are stacked against you, be a little radical.

Some years ago it was my dubious pleasure to fish in a full-blown snow storm on an early May trout fishing expedition. The flakes were big, wet, gossamer affairs that seemed to seek out the tiny exposed area at the back of your neck and trickle unceremoniously down your back. Fortunately, it wasn't particularly cold; but the snow pelted down all the harder. We were dressed for rain so stuck it out even though the trout had been most uncooperative up until the snow began. As I stood knee deep in trout stream and watched the flakes float down and alight on the slick slightly upstream, I saw a rather strange thing. Trout began to rise and suck in the snow flakes during the instant that the flakes remained afloat. They did this repeatedly—it wasn't just chance. They liked the snow! Well, these were the first trout we had seen for almost two days and they would have been welcomed even if they began making snowballs and throwing them at us. At any rate, rising trout, feeding trout, meant renewed fishing efforts. Lures were frantically offered and fished with expert finesse. Every lure in the fly box—except one. To see fish and be unable to catch them is even more discouraging and exasperating than simply having poor success. And as I was feeling even sorrier for myself

than usual, I heard the splashing of a hooked trout and saw my fishing companion net a fair brown and creel him. The next cast barely hit the water and another trout flopped at the business end of the line. The third brown netted prompted me to holler the usual question, "What are you using?" The answer was a bit of a shock: "A number 6 white miller, dry." Why not? It looked like a snow flake and that was what the critters were taking. So with ten chilly thumbs I tried to locate such a fly in my cluttered fly boxes. One slightly-stained, bedraggled white miller, size 4, finally was tied on the leader and with great expectations was laid gracefully (well, fairly gracefully) into the feeding trout. A swirl, and I struck. Missed him. Cast again, swirl, strike! A 10-inch (all right, 9¼-inch) brown flopped and twisted his way toward my net. Another feverish cast. Swirl, missed. Swirl. Nailed him! About the same size, and also a brown. I felt him flop in my creel as I cast again and waited for the strike I knew would come. No strike. No trout. No snow. As suddenly as it began, it stopped snowing. And, as if by signal, the trout ceased their "feeding." But between us we had seven in about ten minutes. Now, as a rule, a number 4 or even a 6 white miller is no killer for 8 to 10-inch trout. But this time; well, see what I mean?

Try these for trout next time you re fishless: Take a small, slightly chewed wet fly in brown or dark red and cover it thoroughly with mud. Rub your leader with mud, making certain that it will sink. Cast this gently into a pool or back water and allow the fly to go to the bottom. Wait about a minute or even two. Move the fly not more than six inches, then wait a count of 20. Another twitch, and so on, right up to the surface. Slowness is the secret here. If this fails, tie on a Colorado spinner, preferably no larger than your little fingernail, in a brass finish. Cast this into the edge of fairly fast water and hold it there. Then let it flutter back downstream with the current. Hold it here, and twitch it in short jerks back to the original position. Trout that are resting behind rocks near this fast water have a chance to look it over without getting suspicious and often will nail it with vengeance.

If you're ever caught in a late snowstorm, the author suggests a white fly since the trout appear to delight in catching the flakes as they fall.

Photo by Jack Dermid

Big water usually means big trout. It often means too much distance for the fly fishermen and where even long casts fall short of the productive areas. The spinning rod is one answer. The light action, 7-footer for open, large trout streams, and the 6-footer for brushy, smaller streams. For small flies and bucktails, use the little plastic bubble for adding weight to these lures. For spinning lures on trout, try particularly the Eelet, No. O tiny Lazy-Ike, and the various metal flashing lures. Fly casting requires plenty of room for back casts in order to reach out 50 to 60 feet. In spinning, practically no back space at all is necessary to flip the lure 70 feet. Try spinning for trout.

The subject of live bait is greeted with, what shall we say, "mixed emotions," by trout fishermen. The facts are that there are times when bait will catch more trout than will artificials. Of course, the reverse is often true also; but let's assume for now that we need some type of bait to interest our trout. What will it be?

The first choice is the angle worm. It is by far the most widely used natural bait for trout, and certainly one of the best. A light wire hook from size 6 to 10, attached to a nylon leader of about 4-pound test, some 6 to 8 feet long, is the terminal equipment necessary. Techniques vary from stream to stream, but the most natural presentation usually pays off. This means casting the carefully baited hook upstream and allowing it to drift along with the current with as little line "drag" as possible. This method is certainly anything but new and not exactly unique. It pays off though.

For brown trout (sometimes big ones), small crayfish hooked through the tail and fished almost as the angle worm is fished, are often quite good. Of course, they are much better bait where this crustacean is found abundantly. Grasshoppers, fished either dry or wet, account for many good trout during the summer. In streams, minnows aren't used a great deal, and their effectiveness is limited. Land beetles, crickets, and spring lizards make up a fair list of natural trout baits.

Fish quietly, fish carefully, know your trout water, keep an open mind and an open fly box. You'll catch trout.

The Shot That Didn't KILL

by Scott Young

Reprinted from *SPORTS ILLUSTRATED*

Of all the alibis with which a duck hunter soothes his soul, none is more heartfelt than "I *know* I hit him," muttered as the bird flies blithely on. For their comfort, it now appears that many a disappointed gunner is right. Dr. William H. Elder, professor of zoology at the University of Missouri, has been examining live ducks with a fluoroscope, and he has found that an impressive number of them have been shot and carry the proof in their bodies.

Wildlife scientists have long been dissatisfied with their attempts to measure hunting pressure. How many ducks are killed? How many die later of wounds? The answers to these questions would provide an ideal yardstick for suggesting better hunting regulations. Accordingly in 1948, believing that the answers to these questions should always be proportionate to the number of birds which survive gunshot wounds, Dr. Elder began an investigation which in seven summers and two winters has taken him to wildfowl concentrations in western states and provinces, and to Holland and England.

With the help of the Delta Waterfowl Research Station in Manitoba, he bought a secondhand X-ray outfit for $350 and built a homemade, portable fluoroscope. With it Dr. Elder has X-rayed more than 20,000 live ducks and geese, mainly in the Mississippi Flyway.

Two of every five of the outwardly healthy geese he X-rayed carried lead souvenirs. Three out of 10 mallard drakes had bits of shot in their flesh, bones, or internal organs; one in five pintail drakes showed the same; one in five mallard hens; one in 10 bluewing teal drakes; and so on down through every species of duck he examined.

How did he go about getting so many of these lively birds to examine? Mainly by seeking out every large-scale banding operation within reach of his jeep or truck every summer. Since banding work always can use another pair of hands he was always welcome.

Many oddities have turned up under his fluoroscope. Of three ducks he found with shot lodged in the brain, one acted so strangely that he kept it under observation at the Delta Station for a few weeks. The duck beat itself against fences and ran around madly, obviously deranged, until it died. In England last year, he found one goose carrying a rifle bullet; another bearing what appeared to be fragments of a land mine. He also shook the English by finding that approximately the same proportion of their wild geese carry body shot as ours.

An offshoot of his work was an attempt to find something significant in the sizes of shot carried by ducks he examined. But no one size dominated the field.

Dr. Elder feels it's too early to give much more meaning to his findings than is obvious from the figures. There is no way to determine in what year a bird was shot, and therefore year-by-year fluctuations in hunting pressure really cannot be measured accurately except in an extreme jump from one year to the next. Although year-by-year fluctuations have not shown significance so far, a measure for the future has been provided. By comparing what Dr. Elder now has found with the figures for, say, 1960, we will know whether hunting pressure has gone up or down. "One thing for sure," he says, "A lot of gunners are shooting at ducks too far away to kill."

Dr. Elder finds that a lot of the hunters that thought they hit the bird actually did leave some shot in him.

Sketch by Jim Lee

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

1955 General Assembly Generally Good To Tar Heel Sportsmen

After one of the longest and most controversial sessions on record, the 1955 General Assembly returned home late in May leaving most of its constituents happy. In the field of wildlife conservation, a total of 58 bills were introduced by both houses. These ranged from local bills pertaining to fox hunting to bills of sweeping statewide importance. When "goodbyes" were said legislators and their hunting and fishing constituents could look back on a job well done.

* * * *

Clearwater Lake Experiment "Successful."

A recent experiment in fish removal at Clearwater lake was considered to be a complete success by fish biologists, administrators and sportsmen who took part in the operation. Lying in Davidson County and an appendage of High Rock Reservoir, Clearwater lake was the scene of the largest single fish removal operation ever attempted by the Wildlife Resources Commission. It had been observed that fish populations in the lake were unbalanced. Drainage of the lake to remove fish was impossible since it connects by culvert with High Rock Reservoir. Using a fish-suffocating chemical, fish biologists were able to bring about almost a 100 percent kill of fish. Most of the fish removed were under-size game species which had been stunted. Largest fish taken — several hundred pounds — were carp, a generally undesirable species. Next month's WILDLIFE will contain a photo feature of this activity together with plans for future development of this body of water.

* * * *

Wildlife Commission Sets Tentative Hunting Regulations.

At its May 1955 meeting the Wildlife Resources formulated a set of tentative hunting regulations for the 1955-1956 season. These tentative rules are in the process of being presented to groups of interested sportsmen at a series of public hearings. Held in each of the nine Commission districts, the meetings began May 24 in Sylva, and were scheduled to end June 3 in Edenton. These meetings are designed to give sportsmen a voice in setting the annual regulations. Few changes over last season's regulations were made in the tentative rules. Printed copies of the official hunting and trapping rules will be in the hands of hunting license dealers by August 1, 1955 when they will be effective.

Nighttime Adventure

FLOUNDER

Gigging

Photo Feature by Jack Dermid

It was a pitch black night at Costin's Landing near Topsail Inlet. The wind was quiet, the water calm, and the only sounds were the occasional squawk of a gull or the splash of a jumping mullet. The tide would soon be rising and the flounders moving into shallow water to feed — a perfect time to go gigging.

Ashley Manning, Jr. and G. W. "Sonny" Meeks of Holly Shelter quickly rented a skiff and loaded their gear into it. Soon the kerosene lanterns were glowing brightly, and their nighttime adventure was underway.

The outboard pushed the boat on a tortuous course around mud bars and islands, along winding channels to the shallow sand flats where flounders abound. Running aground, following blind channels to nowhere and then back tracking were part of the game. It is not easy to navigate in a trackless area of marsh and water in the dark. To keep from getting completely confused, a constant check was made on the position of distant buoy and cottage lights. At the fishing grounds, the outboard was lifted and the boat poled along at a slow pace.

Flounder gigging is more than an adventure in fishing. It is a journey into the strange world of underwater life. The light of the lantern opens up a window through the water's surface, and every movement of the boat brings you face to face with crabs, oysters, darting shrimp, mullet, occasional sting rays, and many unusual creatures for which only scientists have a name. And flounders, too!

But the bottom of the sound is not alive with flounders. They are there, but you have to look hard to find them, and until your eye is trained to spot the elusive camouflaged shapes, you will pass by many more than you see. The flounder is a flat, dark fish with both eyes on the top of its head, and it lies on the bottom in the same position as in the photo on the lower right, except it is buried beneath the sand with, perhaps, only the eyes and a tooth or two exposed. There it waits in ambush for a luckless minnow or other creature.

It is like looking for a ghost of a fish. To the untrained eye, every splotch on the bottom takes the shape of a flounder, and even the experienced is likely to make many false jabs with the gig to come up with a crab or with nothing. Then you might touch a spot lightly, knowing no flounder is there, and have the critter scurry away before you can jab again.

The sport of flounder gigging is in the search and in the accuracy of thrusting the gig. Unless a whopper is nailed, there is not much of a fight, but what the flounder lacks in combat, it makes it up ten-fold in eating qualities.

Let's go flounder gigging with Manning and Meeks. It's fun!

Sonny Meeks was navigator through the trackless salt marshes. Note how the lantern is rigged to the boat with a wooden arm and C-clamp and the metal foil on the mantle which reflects light outward.

At the fishing grounds, Meeks poles the skiff slowly while Manning glues his eyes to the bottom in search of elusive flounders. Even the veteran can be fooled by the buried fish. Visibility into the water is surprising.

Accuracy with the gig pays off, and Manning lifts a nice fish from the water. To insure a catch, the gig is thrust hard and the flounder held flat on the bottom until it is certain it is securely hooked on the tines. Too much haste in boating it might result in an escape.

Manning and Meeks look at a dead flounder with a glow of satisfaction that suggests they envision the fish in filleted form and sizzling in a frying pan. It ranks tops in eating quality.

The easiest way to remove a flapping flounder from the gig is to pull it against a boat seat. The flounder has a mouthful of teeth, and as a precautionary measure, should not be grabbed recklessly with the hands. The underparts of the fish are white and contrast sharply with the dark upperparts.

The night's catch totaled four fish, none of them trophies, but the fun and sport in catching them will last a long time. The vast areas of sound along North Carolina's coast offer flounder enthusiasts almost unlimited opportunity.

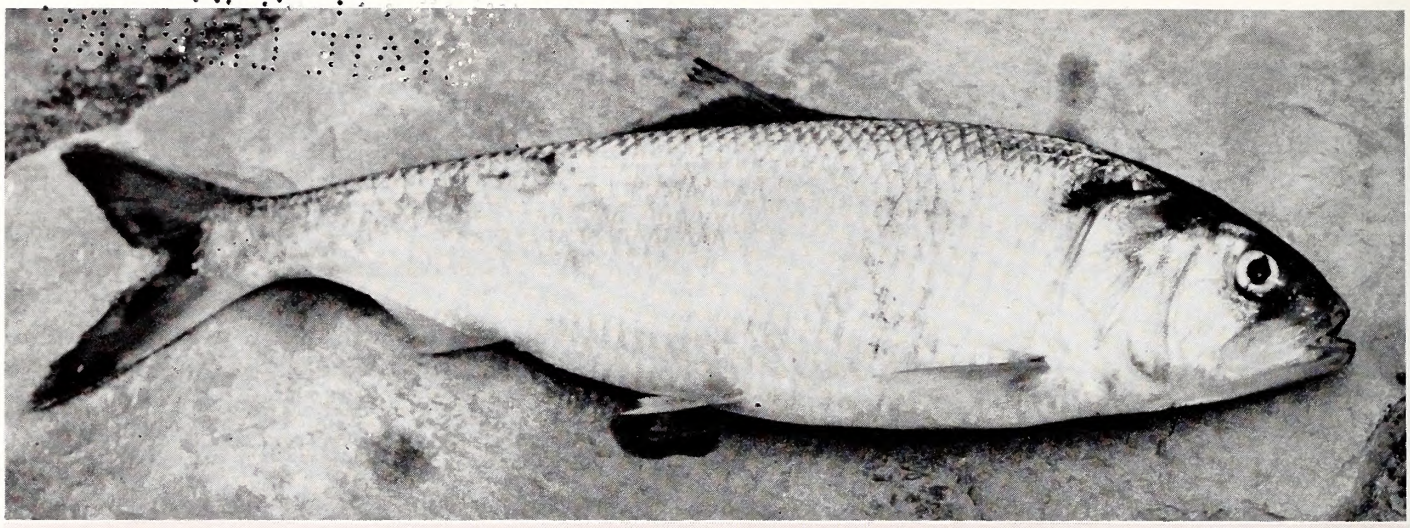


Photo by Rod Amundson

Members of the herring family, to which the white shad belongs, are somewhat similar in general appearance. This species is most likely to be confused with the hickory shad, but can be distinguished from it by the presence of a notch at the tip of the upper jaw.

THE WHITE SHAD

by J. H. Cornell

The common shad, or white shad as it is sometimes known, has little reputation as a game fish, and is seldom caught on fishing tackle. The sport fisherman more often takes the shad with his bow or dip net. Although dipping for shad can be quite an exciting sport in itself, the greatest claim to fame which the shad enjoys results from its particularly delicious flavor on the dinner table.

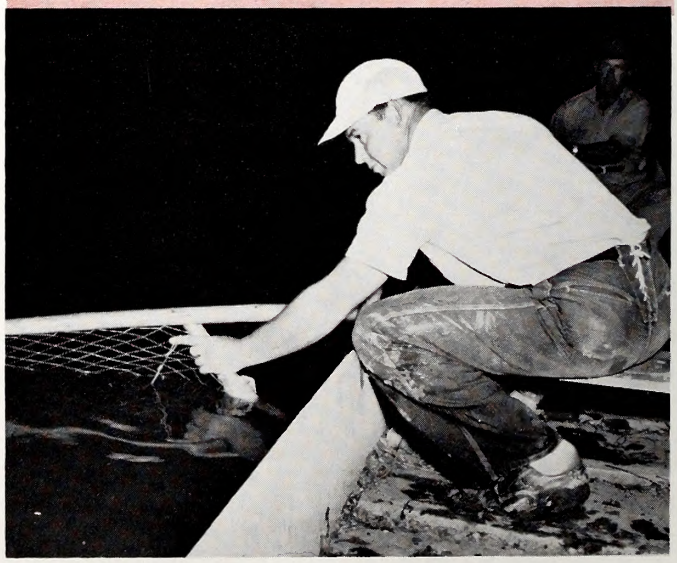
Even its scientific name is a tribute to its wonderful flavor. The name Alosa is derived from the Saxon "allis" which is the name of the European shad. The name "sapidissima" means "most palatable." And so our common shad is named "most palatable shad."

The shad is a member of the herring family. All have a silvery color, with dark bluish or brassy colored backs. The anal fin is long and low, the tail is forked, and the dorsal fin is small, single, and without spines. The members of the herring family have no lateral line.

The shad has about fifteen rays in the dorsal fin, twenty-one in the anal, and about sixty scales in the lateral series. It has a dark spot behind the gill cover, and sometimes others are visible along the line dividing the color of the back from the silvery color of the side. These marks are particularly evident after the scales have been removed. The shad can be differentiated from some of its relatives by the fact that the peritoneum, which lines the abdominal cavity, is white.

Close relatives of the shad include the common herring which spends its entire life in the ocean. Several of its relatives, such as the shad, are anadromous in that they move from the ocean into fresh-water tributary rivers to spawn. The hickory shad, for example, looks something like the true shad and is sometimes sold to the unsuspecting customer as the common or white shad. Also closely related is the alewife or branch herring, which comes very far into inland waters, all

In this series of photos, Norwood Johnson of Smithfield shows the technique of bow netting for shad during their spawning run up the Neuse River. The large spoon-shaped net is held under water as the skiff drifts downstream. To increase the sensitivity of the rig . . .



the way into the headwater branches, to spawn. The alewife is also known as the "big-eyed herring" because its eye is much larger than the other herring species. The glut herring or summer herring is also a close relative of the shad, and frequently spawns in the same spawning grounds. The young of all these species are almost indistinguishable to the average fisherman, although the adults are recognized as separate species.

Habitat

Except for a few weeks of its life during the spawning migration, the shad spends its life in the depths of the ocean. Practically nothing is known of this phase of its existence, and the commercial fishermen's nets have not found the location of the schools of shad while they are in the ocean. The shad fishery is carried on entirely on the spawning populations at the time they are moving into the coastal rivers to find fresh water for spawning purposes.

Like most of the other activities of fish, the spawning run is controlled by temperature. In Albemarle Sound the earliest shad may appear in late February but the peak of the run occurs in late March or early April. The water temperature at that time is in the neighborhood of 50 to 55 degrees. Spawning is believed to take place between the temperatures of 56 and 66 degrees.

The necessary habitat for successful spawning consists of clear, hard-bottomed streams which are free from pollution. Our shad populations have been seriously reduced in recent years by heavy fishing. They have been much more seriously reduced by the construction of dams which seal off the spawning grounds, as on the Cape Fear River for example, and by the effects of pollution. Rivers which would otherwise be used by shad are very effectively sealed off to them by industrial and organic wastes from our cities. Even though some rivers escape this form of pollution, a heavy layer of soft silt on river bottoms will reduce spawning success tremendously.

Shad build no nests, and eggs which fall to the bottom may frequently be suffocated in the bottom mud. It is believed that the reduction of the species from unsuccessful spawning, caused by silt pollution as well as industrial and organic pollution, has a greater detrimental effect on the population than the numbers removed by our present fishing practices.

Life History

The shad spends most of its life in the ocean depths beyond the reach of the fishermen's nets. After reaching the age of three or four years, it moves into the fresh water rivers, by way of the sounds and tidal estuaries, for the purpose of reproduction. This movement into fresh water occurs annually and apparently is controlled by temperature.

In the St. John's River in Florida, one of the southernmost shad streams, they appear in early November. The runs begin progressively later in rivers to the north. In Georgia the runs are somewhat later than in Florida. North Carolina shad runs are later than those in Georgia, and so on up the Atlantic coast to New Brunswick where the spawning migration begins in late May and continues into June.

Because of this general progression of the time of the spawning migration northward along the coast, it was believed for many years that the shad wintered somewhere off the southern Florida coast and moved northward in the spring as water temperatures became suitable. This theory was combined with that of the so-called "instinct of nativity" by virtue of which each

. . . to the impact of a fish, his forefinger is inserted in a loop of string which is attached to the bag of the net. When a shad hits, Norwood quickly raises the net and dumps the flapping fish into the bottom of the boat. Sometimes several are caught at once.

A nice shad for the pot. Most netting is done during late evening or at night, and the running of a river swollen by spring rains in the dark is an exciting sport. The white shad's greatest claim to fame, however, is its delicious flavor on the dinner table.

Photos by Jack Dermid

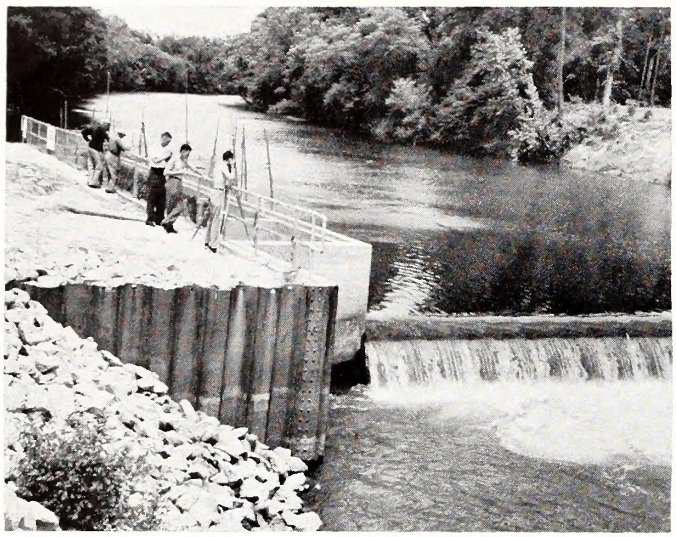


Photo by Jack Riley

To enable shad to move upstream during periods of low water, the Carolina Power and Light Company constructed this fish ladder beside their dam on the Neuse River near Goldsboro.

individual migratory fish, when mature, was supposed to be able to make its way back to the particular stream in which it was hatched. It was believed that this tremendous total population of shad began its northern migration along the coast, and that various groups of shad broke off from it to ascend the streams in which they were spawned as the main group passed the mouths of those rivers and sounds. Some still believe in this theory, but in general it has been discarded in favor of a much more plausible one.

It is now generally accepted that shad spend the first three or four years of their lives in the deep waters of the ocean directly off the coast from the rivers in which they were spawned. A shad which hatched from an egg in the Tar River might have moved out through Hatteras Inlet, and have lived in the ocean opposite that point. When it was old enough to return on its spawning migration, it might return through the same inlet and return to the Tar River again. But it might equally well have moved up into Albemarle Sound to spawn in the Chowan River or the Pasquotank or the Roanoke. It appears that the point of return is general; that is, it returns to the general locality from which it came but not necessarily to the same river.

The shad run appears in the Albemarle Sound area in late March or early April. Fishermen there will tell you that the "goggle-eye" will be running on the "Monday following Easter Sunday," and that shad will come about three or four weeks later along with the school herring.

The shad migration consists of successive waves, spaced at intervals of several days. The early waves of fish are principally males. Females appear in greater numbers in the later runs.

North Carolina shad fishermen recognize a distinction in a late run of fish that probably is actually a subspecies. They are variously called the May Shad, the Short-Tail Shad, and the Gold-backed Shad. They are reported to be heavier, deeper fish with a much more brassy color. They invariably appear later than the regular run of shad.

In going to the spawning grounds, shad move up through the sounds and tidal estuaries into the tributary rivers. They move upstream and seek their preferred spawning ground on some sandy or pebbly shallow beach at the mouth of a clear inflowing stream. On the average twenty-five or thirty thousand eggs are produced by each roe fish. The eggs are deposited on the bottom and receive no further parental care. As with all other fish, the incubation period depends on the water temperature, but usually lasts from six to ten days.

Newly hatched shad are about one-third of an inch long. They feed on plankton, and grow rapidly in fertile waters. By fall, when they leave fresh water and return to salt water, they are from three to seven inches long. At this age they pass out into the ocean and are not found again until they return as three or four year old fish, on their first spawning migration.

There has been much conjecture on the number of times shad may be expected to return to their spawning grounds after their first trip. In very recent years some information has been collected on this subject by tagging studies. In northern waters, shad may return on several successful spawning migrations. In the southern waters, it appears that they do not return at all. The reason for this is not known, but it may be that the southern rivers become too warm for the weakened adults to make their way back to the ocean after spawning. It is particularly interesting to note that the Neuse River seems to be the breaking point between the southern waters, where the spawning population does not return to the ocean, and the northern waters where there is some return of the adult fish in successive years. Northward from North Carolina waters there is a progressively greater survival of the spawning population. This should be a most significant factor in the management of the fishery for this species.

Importance

The shad is such a desirable food fish, and the demand for it in fresh condition is so great in the inland parts of the United States, that many attempts have been made to introduce it in inland waters in hope that it will become land-locked. Like some other anadromous species, however, all efforts to produce a land-locked population have met with failure. It seems to be a requirement of the species that they must return to salt water to be able to mature successfully.

The only successful introduction of shad into foreign waters was in the Pacific Ocean off California. It has developed successfully there and now supports an important fishery all the way from Puget Sound to Point Concepcion. The habits of the shad there are the same as in their native region on the Atlantic coast.

Until 1935 the shad was, in terms of dollar value, the most valuable food fish in North Carolina waters. It was an important species along the entire Atlantic coast, and supported a commercial fishery in every state. It is difficult to imagine that prior to 1800 shad were so abundant that they were sold as fertilizer. Even as late as 1896, reasonably accurate records indicate that at least fifty million pounds were taken from the rivers of the Atlantic coast. There has been a serious decrease since that time. North Carolina's production was about nine million pounds in 1897, and this declined to less than one million in 1940. When one sees the shad nets in the rivers at the time of migration, it seems easy to believe that overfishing is probably the cause of the reduced population. However, this idea has been refuted to some extent by a consideration of the catch records.

During the years of the Civil War, there was practically no shad fishery carried on. If overfishing were the cause, the years immediately following the Civil War should have produced the highest catches on record. Actually the catches in those years were lower than in the years preceding the time when the fishery was not persecuted. We must look for some other fundamental explanation.

Beginning in the 1870's the United States Fish Commission began attempts to correct the decline of the shad fishery by the operation of shad hatcheries. It was believed that a sufficient number of young shad could be hatched artificially to replace the decline of the native population. After some fifty years or more of intensive hatchery culture, the statistics of the catch and the records from all parts of the coast showed that the hatchery production was having not the slightest effect on shad populations. It was then that the value of shad hatcheries was questioned and their operation discontinued.

If the shad is to be returned to its former condition of abundance and importance, it will be necessary to clean up our rivers. The top soil that has washed into our streams from extensive improper agriculture practices can never be removed. We can at least stop such a situation from becoming worse. Industrial wastes and the organic wastes from our cities can and should be removed from used water before that water is returned to our rivers. Pollution constitutes a health hazard for our people. It destroys our important fishery resources. When the day comes that our rivers cease being open sewers, and again become usable waters, then our fisheries will return to something like their former abundance. Perhaps the time will come again when shad will be caught in the Neuse River at Raleigh!

In recognition of the need for successful spawning in order to carry out the desire for an increased shad population, the Wildlife Resources Commission has established areas below many of the various dams which retard or stop the upstream migration of spawning shad and which tend to concentrate them in the waters immediately below the dams. By excluding the nets from these areas, the shad have some haven of refuge on spawning grounds which may not be preferred, but which are the upstream limits to which they may go. These concentration points have become critical spawning areas and must be protected.

The shad is becoming important in another way. Its past importance has been recognized only on the basis of its dollar value as a food fish. Recently the fishermen are coming to learn that this fine fish can be taken on hook and line. The shad is becoming an increasingly important game fish.

Hook and line fishing for shad is so interesting and novel that every Eastern Carolina community has some fisherman who claims to have originated it. That this possibility of sport fishing is nothing new is shown by the following quotation from Jordan, who wrote many years ago "After entering the rivers, the shad take but little, if any, food previous to spawning, but after casting its eggs it will strike at flies or other small shiny objects, and it has been known to take the artificial fly."

Small drone spoons, white flies with a silver body and preceded by a red glass bead, or small silver spinners ahead of light colored streamer flies have been found to be effective. It seems that only an occasional fish can be coaxed into taking an artificial lure. Hook and line fishing for shad is of importance only where there is a considerable concentration of fish, as below a dam which stops their migration. In areas set aside for the exclusion of net fishing, hook and line fishing is permitted. This type of fishing reduces the spawning populations but little and still provides excellent sport for many people.

Have YOU tried hook and line fishing for shad? If not, *NOW* is the time! You should have been there yesterday when they were biting!

An overall view of a bow or dip net commonly used in catching shad. During recent years, however, hook and line fishing for shad has become popular sport in many localities. See text for details.

Observations on BLACK DUCKS

by Ralph A. Fisher, Sr.

As a boy I often observed flocks of black ducks surface-feeding along with pintails. The great flocks that Dad and I counted came in the following order: black duck, pintail, mallard and the canvasback. We saw very few wood ducks. I watched many a grassy nest of the black when as a youth I hunted and trapped the pure marsh along the Delaware River from old Petty Island to Riverton on the New Jersey shore.

These nests were built mostly on the ground, and were often far from the reach of the shifting tides. The nests, lined with feathers of the black duck hen, contained not more than eight eggs. Some hatched out the full count, while others fell prey to the fox, skunk, hawk and other birds of prey. Some were destroyed by the booted foot of a hunter.

Black ducks in flight have often fooled me with their chatter, for in foul weather they resemble a flock of mallards. The black duck is actually a rather dusky brown, with high-lighted splashes of deeper shades of tan and brown. The black duck seems to thrive in freezing weather, for I have found them on the Jersey marshes when the ice was thick and the temperature near zero.

Because of his hardy constitution the blackie remains in the marshes unless unusually severe weather makes feeding impossible in the inland ponds and offshore salt marshes. Only drifting snow and frozen soil prevents the duck from locating the wild rice, nuts, vegetables and countless roots and greens that constitute much of his food. When the blackie has been feeding on a vegetable diet, his roasted flesh is most enjoyable. Several that I shot as a boy had been feeding on frogs, small fish and insects and these proved to be oily and fishy when my mother prepared them.

The breeding range of the black duck extends from the little state of Delaware northward along the Atlantic Coast to Maine, and westward to the Great Lakes. Although the breeding range is somewhat confined, he is more extensive in his wintering grounds, for he will spend the winter from Maine and the Great Lakes as far south as the swamps and estuaries of Louisiana. Despite his wide winter range, he is seldom a conspicuous target for the hunter, since from birth the black duck is very sly and wary and remains a much wilder bird throughout his lifetime.

The black duck was the last wild duck to desert the polluted and sewage-infested Delaware marsh during the "Twenties"; because of their great attachment to their home breeding grounds they returned each year until the pollution became overpowering. Now, I understand, they are among the first to return as rigid control methods are cleaning up the vast marshes of the Delaware River. Proof comes from the annual inventory of the Atlantic Flyway, which reports "a 20 percent rise over last year" in waterfowl, and the increase is attributed to a greater number of black duck, pintail, and several other minor species.

The old saying that time and tide for no man wait is true, but it is possible that our rugged northeasterner, the black duck, has just been waiting for man, for time, and for a clean tide.

When he leaves his well-concealed nest along with eight or ten of his brothers and sisters, the black duckling is still covered with fine down. The family remains in the marsh until the youngsters learn to fly.

Photo by Ernest E. Mulch

PROTECTOR OF THE MONTH

C. M. Capel

From the standpoints of both service and age, Mr. Max Capel is one of the oldest law enforcement officers now working for the Wildlife Resources Commission. He was born on December 14, 1892, and went to work as a combination forest warden and game protector on July 16, 1933. When the Wildlife Commission was separated from the Department of Conservation and Development in 1947, Mr. Capel chose to remain with the Commission.

Despite his age, Mr. Capel is a vigorous enforcement officer, and many of the younger protectors find it difficult to match his work.

Mr. Capel resides in Mt. Gilead in Montgomery County. He is married and has three daughters. Active in civic affairs, he is a Mason, a member of the Lions Club, and chairman of the board of trustees of the First Baptist Church.

It's the Law

Question: What is the law with regard to fishing license requirements for nonresidents of this State?

Answer: Prior to 1953, a nonresident could obtain a season fishing license for $6.10, a five-day license for $2.60, or a one-day permit for $1.10. The 1953 legislature eliminated the use of nonresident one-day and five-day licenses and imposed a requirement for an additional special trout license coasting $1.10 on all residents and nonresidents who fish in designated public mountain trout waters which are stocked at state expense. The 1955 legislature reinstated the use of one-day and five-day licenses by nonresidents but at the same time raised the ante for a nonresident special trout license to $2.10. The special trout license requirement does not, however, apply to trout waters within the Great Smoky Mountains National Park where no waters are stocked from state trout hatcheries.

Enforcement Record for March

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of March, 1955:

Persons checked	**28,001**
Prosecutions	**409**
Convictions	**395**
Convictions fined	**224**
Convictions not fined	**171**
Fines collected	**$5,868.00**
Costs collected	**$2,678.76**

No part of the fines or costs collected are paid to the Wildlife Commission or its personnel. All fines and any arrest or witness fees charged in favor of Wildlife Protectors are paid into the school funds of the counties wherein the violations occurred.

COURTS **from page 5**

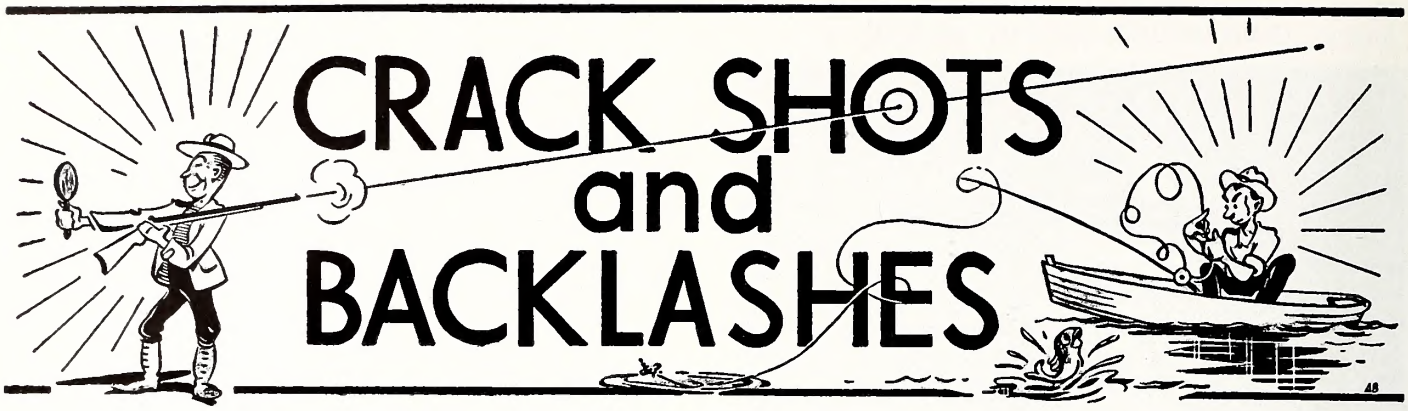
No doubt about it, Mr. Fisherman, the crooked, ignorant, or uninterested judge can be the biggest handicap in the way of proper enforcement of the fishing laws.

How do you spot this sort of thing if it goes on in your community? First of all, ask your conservation officer. Don't put him on the spot by asking him publicly in front of your sportsmen's club—he may not dare to speak publicly and lose the little co-operation he does get from the courts. Ask him this question over a cup of coffee—and you'll find out what the judges you elected are doing to protect your sport for now and for future generations.

Secondly, if your state publishes a list of violators and their fines, watch for the amounts assessed by your court. If they run consistently lower than the state-wide average, they bear watching. One low fine doesn't mean a poor court—a series of very low fines usually indicates that something is amiss.

If your fishing is suffering from fishy courts, what can you do about it? First of all, remember that YOU elected that judge. Tell him what you want. If you think he isn't doing right, tell him so. Point out to him that violations are thefts of the people's rights. He'll be greatly impressed—for very few people ever mention justice to the justice!

Secondly—if talking to him doesn't help, remember to vote and to get rid of him. Don't let a fishy court spoil your fishing future.



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

We are going to start off with a little preaching, and then let our wonderful readers and contributors carry the rest of the show.

The preaching is about man's best friends. We are now in the peak of the game bird and game animal breeding season. At this time the young, born and unborn, are at the most critical and vulnerable time of their life histories. Quail nests, rabbit nests, grouse, wild turkey—all ground nesting creatures are in danger from a roving army of stray dogs and cats. Many of these predatory pets are ownerless, but most have owners. You and I as pet owners have a responsibility toward our wildlife resources and to ourselves. Let's keep our pets from destroying game that will give us hours of happy recreation next fall!

Now for the mail:

"Dear Sir:

"Concerning the article in your "Crackshots and Backlashes" for February about the poor man who lost his 14" brown trout by falling in Steele Creek, I'd just like to say that someone is damaging the reputation of this fine sportsman. As the only eye witness to the catching of this fish, I must support the integrity of the above mentioned sportsman.

"It was a hot summer day and he very proudly showed the fish to me and later at his car showed this fine 14 incher to his two friends expounding the trials he suffered in landing this fish. He was a happy man. Imagine the suffering he must have gone through when he later fell in and came out without that beautiful fish.

"I would suggest that Tommy Reece of Hickory might meet me on a good trout stream on a hot day with suitable assets and also receive my valuable support and loyalty. Ahem!

Yours very truly,
Jack Hewitt
Marion, N. C."

"P.S. A bouquet to you fellows in the Wildlife Commission for the swell job you have been doing."

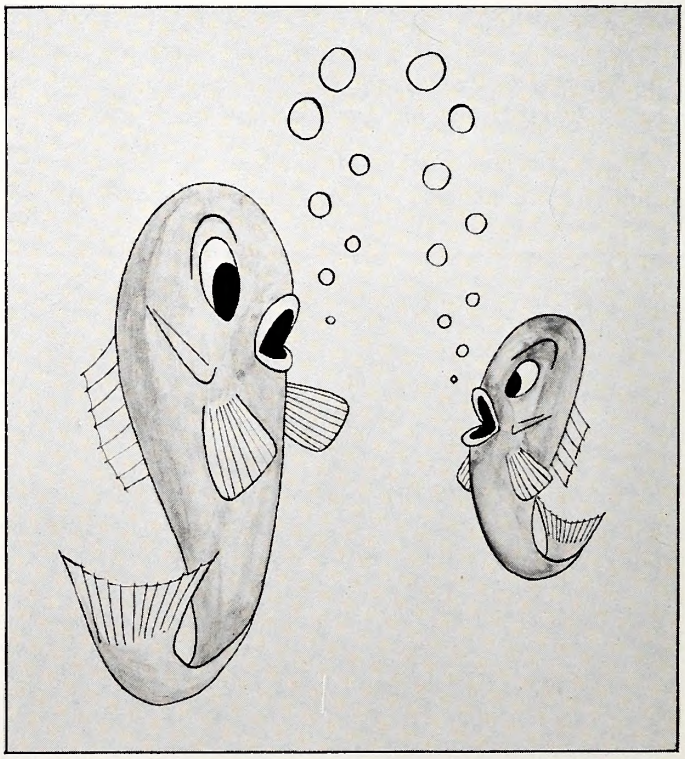
Thanks, Jack. We'd like to join you and Tommy in that trout fishing battle.

"Dear Sir:

"I do not agree with Mr. Jack Kelley, in his condemnation of the 22 rifle for hunting purposes. My two friends and I have hunted for years with 22 rifles, for squirrels and groundhogs. And we have used them successfully, losing only a small amount of game shot. Mr. Kelley should learn to shoot a 22 rifle, then he would change his mind.

Yours truly,
George Watson
Boone, N. C."

Editorially, we are ready to bury the hatchet—or 22 rifle, and plea for tolerance of the other fellow's favorite weapon. For dueling powder puffs at 20 paces are recommended.



Cartoon by Jim Lee

"So help me, that worm was thi-i-s long!"

"Dear Sir:

"It may be interesting to your staff to know that I caught a very nice bass recently. To make the story interesting, it was hooked and landed with a 6 pound monofilament line and without a landing net.

"I am sure all local fishermen are interested in a bass weighing eleven pounds and five ounces. I have affidavits as to length and weight.

Yours very truly
E. M. Irwin
Charlotte, N. C."

Thank's for the news. Mind telling us WHERE you caught him?

FOREST FIRE DESTROYS GAME

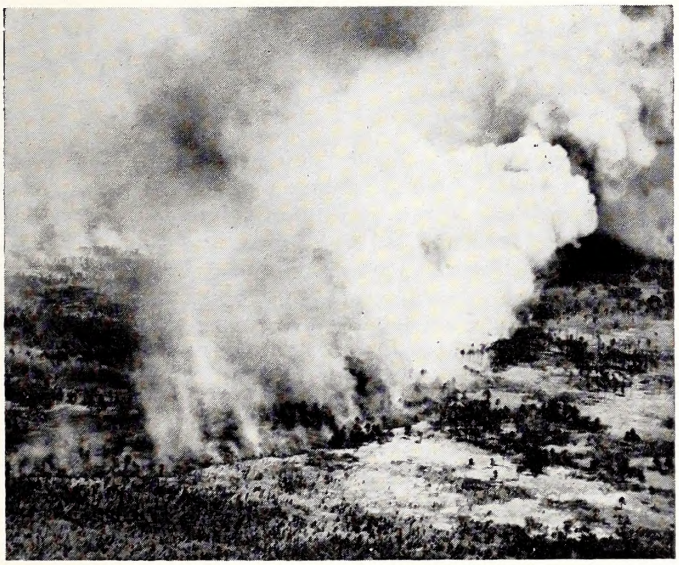


Photo by Jim Lee

Only one small finger of the fire that swept over more than 200,000 acres of forest in early April. This blaze sent a column of smoke more than a mile into the sky.

"Dear Sir:

"I am taking this time to write to you and tell you how much I like the Wildlife Resources magazine. I am in my second year of membership and plan to remain one. I would like to get some information for myself and another member if I may.

"First, I am a member of the very small staff of the Fort Sill Fish and Wildlife Association. Here at Fort Sill, Oklahoma, I am one of six wildlife rangers headed by Col. Charles A. Stratton, and have been since 1952, when I came here from Alaska. Even though my home is Burlington, North Carolina, I have never been stationed any closer to North Carolina than South Carolina in 1940. I am very interested in wildlife and have been for almost three years, and the letter I read in this month's magazine from Mr. W. E. Newton about baiting lakes with hay.

"If I may say so, yes by all means—especially for crappie. We have four lakes (man made) so to speak, and today at one of the largest on the reservation which contains 365 acres we placed forty bales of hay along the shore line and anchored some in the deeper parts of the lake. The Oklahoma State Game Department swears by it. Even though this is the second year it's been done here the fishermen have been very pleased with results last summer and fall, and they have decided that it will be a yearly practice.

"We are also trying a new one out: 'Sweetfeed,' containing syrups or molasses. This we hope will bring in bigger bluegills, what do you think?

"I hope this will help Mr. Newton or anyone else who wishes to try hay in baiting their favorite fishing hole or lakes. Since I've used so much time here I will make my request and close for this time, but will look forward to my next magazine since I have already finished reading this month's. I would like very much to have a booklet on 'bird furniture' mentioned in April 1955 issue. And until next time we meet through the mail I remain,

Yours sincerely,
Sgt. G. E. Allred
Fort Sill, Oklahoma"

"Dear Sir:

"Just got to this month's issue. But just who's that bio-lologist trying to fool? Tell him COKE crates have strappings AND nails, still—to hold them together! Weight about one-half ounce or maybe one ounce.

Yours truly,
R. R. Beatty
Charlotte, N. C."

The biololllologist didn't fool anybody, but a lot of us had fun out of it.

"Dear Sir:

"I enjoy reading WILDLIFE very much and am renewing my subscription for two years.

"I am very much in favor of dog control. I just read C. C. Venable's letter in WILDLIFE. He is one hundred per cent right. I am in favor of a State law to make it $50 fine to catch a dog on the loose unless he is with his master. They destroy game, spread disease, and they are a terrible nuisance.

Yours truly,
Ashley Mizelle
Chocowinity, N. C.

"Dear Sir:

"In this letter you will find one dollar, for which please send Butch Parrish the WILDIFE magazine. He is a boy and a grandson of mine, and every month he asks for my magazine so from this on he can look at his own.

"The fishing fever is breaking out everywhere now. I had a wonderful experience last week, caught three bass. One weighed 6 pounds. Also got a jack which was 26 inches long. In this jack was a largemouth bass which measured 10 inches long. This is no fish story it is true. We also saw on that trip as many as 50 or 60 deer at one time, all in one field. None of us, five, ever saw anything like this.

"Hope to see you soon on television.

Yours sincerely,
Henry C. Royster
Durham, N. C."

"Dear Sir:

"Enclosed is my check for $1.00 for renewal of my subscription to WILDLIFE IN NORTH CAROLINA, which expired with the March issue.

"As President of the Wilson Ornithological Club, State Ornithologist for Kentucky, and Outdoor Columnist for the Louisville, Kentucky Courier Journal, I find your magazine one of the finest and most informative of its kind. It is always chock full of sound, biological information and scientific data which creates a veritable goldmine of suggested background and source material for articles to be passed on to the general public.

Yours very truly,
Burt L. Monroe
Anchorage, Ky."

"Dear Sir:

"Upon recent inquiry, I found there are no provisions governing the up and coming sport—skin diving. I was very discouraged in finding this out.

"To one of the laity, skin diving is the donning of swim fins and mask using a small harpoon usually powered by carbon dioxide or rubber bands. In this, it must be noted that the reflexes of the fish are about five times those of man. Seeing the harpoon must be artifically powered. However, no spear can be used in this state that is artifically powered. Using a spear under water without an artifical power element would be just like trying to kill a bear with a .22. It would be pure luck if you got him.

"To some people and evidently the N. C. Wildlife Commission, it must be thought this sport would create a vast fish genicide. It certainly will not.

"Truly, the diving mask opens the door to a new world of sports that can be enjoyed by all ages. There are many under water sportsmen in California and on the west coast. This sport is really "catching on" in Virginia. We would like to see rules come into being for the taking of fresh water game fish by the under water swimmer. The one reason why the sport hasn't "caught on" in this state, is because the N. C. Wildlife Commission doesn't seem to take an interest in this wonderful sport. Therefore diving enthusiasts can not bring this amazing sport to the fresh waters of the state. This is a sad predicament if you ask me.

"These sportsmen not only have to cope with the baffling agility of the fish, but cold inland waters quickly drain body calories, therefore, one may be restricted as to time in the water. Divers do not trick fish with fancy lures or the like. The skin diver takes on the fish on the fish's terms. Pray tell me, what better chances could a fish have? Let us have skin diving in North Carolina. It's a sport and a good one.

Yours very truly,
Frank M. Hancock
Scotland Neck, N. C."

Let's have more reader opinion on this subject.

"Dear Sir:

"After reading a letter from Mr. Glenn T. Youngblood regarding the subscription rates, it is a firm conviction of the writer, as well as several of his friends who also subscribes to your magazine that the high quality of the articles makes this magazine worth more than $1.00 for two years. It is the opinion of the writer that you would not lose subscriber one should this subscription rate be raised to $1.00 per year, because goodness knows the magazine of WILDLIFE calibre is certainly worth $1.00 per year.

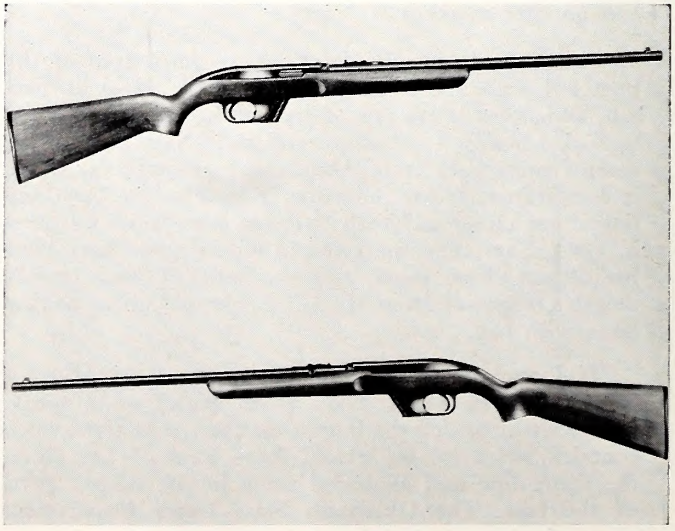
"As my subscription runs out next month, I am sending my dollar to start this $1.00 per year rate.

Yours very truly,
E. B. Spencer
Matthews, N. C."

New Semi-Automatic 22 Introduced

Shown below is Winchester's new Model 77, the first low-cost semi-automatic 22 rifle. Equipped with a tubular magazine it has a capacity of 15 cartridges.

The same rifle equipped with a clip magazine is illustrated in left and right side views. Both models sell for less than forty dollars.



"JOE BEAVER" By Ed Nofziger

Forest Service, U. S. Department of Agriculture

"When I said 'Trash' I wasn't referring to the litter on the camp ground."

"Dear Sir:

"I have just finished reading 'The Common Sucker' article in my March issue of WILDLIFE IN NORTH CAROLINA and while I enjoyed this article very much, I beg to differ with the statement, 'They do not take a hook well.'

"On several occasions I have fished in Haw River in the Altamahaw-Ossippee section, which is pure enough for fish life to survive, and I met a fellow by the name of Woodrow Ward who was sucker fishing. Now he catches suckers not just by accident, but as deliberate as a fisherman fishing for bass with minnows. He catches hundreds of pounds each year, on hooks, and from what I understand, there are others who catch them also. "These sucker fishermen have a system of their own and a lot of patience. Dough is used for bait and it is fished as close to the bottom as possible. The sucker 'bite' is hardly noticeable and only the trained eye can tell when a sucker is taking the dough ball.

"I am not writing this letter for publication but I do think an article on sucker fishing with hooks would be interesting and informative to a lot of people if your department cares to investigate further. There are quite a few people who think it is impossible to catch sucker on hooks.

"The season is just coming in for sucker fishing at its best. According to Ward's testimony, April and May is the best time and incidentally, Ward lives in Altamahaw if you want to see an expert at work.

Sincerely,
R. E. Isley
Burlington, N. C."

"Mr. R. E. Isley
132 Williamson Street
Burlington, N. C.

Dear Mr. Isley:

"You are entirely correct that many suckers are caught on hooks every year. Our statement that "they do not take a hook well" was for the purpose of comparing them with bream, bass, or trout, all of which are much easier to catch. There are two other references in the article indicating that suckers are taken on hooks.

"Your observation that the sucker 'bite' is hardly noticeable really is an understatement, and it takes an experienced fisherman to catch them consistently.

"As a boy, I used a rig of my own development to help show when a sucker bites. A sinker was tied to the end of a line. The baited hook was attached to a gut leader just a few inches long, and the leader was tied to the line some eight or ten inches above the sinker. When the line was cast into a stream, the hook rested on the bottom or very near it. The rod was propped up on the bank and the reel tightened until the line was as tight as the weight of the sinker would permit. A small stick was split on one end and slipped onto the line between the rod tip and the water and was permitted to hang in space. Since both the hook and stick were between the rod tip and the sinker, any slight movement of the bait would be reflected in an agitation of the stick hanging from the line. That system accounted for numerous strings of suckers during March and April when the suckers were running in the local streams. I have not tried it for many years, but it is most likely that the suckers still will cooperate. The idea is being passed along in case you care to try it.

"We appreciate your comments on sucker fishing. It really is an enjoyable sport.

Very truly yours,
J. H. Cornell
Chief Fish Division"

* * * *

According to the Sport Fishing Institute of Washington, D. C., "more pounds of fish per sport fisherman are caught in the ocean waters of southeastern North Carolina than in any other coastal region of the United States."

* * * *

Fresh-water anglers will find the White Oak River north of Swansboro as far as Maysville a good source of largemouth bass, perch, bream, and pike.

* * * *

Excellent fresh-water fishing is available on the Outer Banks. In the Nags Head-Kitty Hawk area, ponds within sight of the Wright Memorial produce sizeable largemouth bass, perch, bream and robin.

COMMON SENSE SAFETY FOR FISHING FUN

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Wildlife
IN NORTH CAROLINA

TEN CENTS JULY • 1955

Photo by Jack Dermid

July . . .

Sittin' in the sun
Sittin' in the shade
Me and my fishin' pole
Have got life made

Wildlife IN NORTH CAROLINA

The Official Publication of The North Carolina Wildlife Resources Commission, Raleigh

A monthly magazine devoted to the protection and restoration of our Wildlife Resources and to the improvement of hunting and fishing in North Carolina

State of North Carolina

LUTHER H. HODGES
Governor

North Carolina Wildlife Resources Commission

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COVER

The water seethes as a largemouth bass disdainfully throws aside a deep-running lure. Cast again—this fellow means business! Water-color by Duane Raver.

☆ ☆ ☆

EDITORIAL STAFF

Rod Amundson ..... *Editor*
Jack Dermid ..... *Managing Editor*
Jim Lee ..... *Editorial Assistant*
Anne Taylor ..... *Circulation*

☆ ☆ ☆

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication all news items, articles, photographs, and other material dealing with the various activities which combine to make North Carolina a better state for hunting and fishing. Full credit is given for all materials published.

☆ ☆ ☆

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Trout Stream Insects

by L. B. Tebo

Fisheries Investigator

Illustrations by Margo Tebo

Casting loose from the stream bottom, the small flattened nymph floated to the surface of the water. During its struggles to become free of its nymphal skin the current swiftly carried it downstream. Just as the transparent wings were freed and stretched for flight, there was a flash of silver and the hapless creature disappeared into the maw of a large trout. An angler, noting the little drama, quickly sorted through his well-filled fly box and after selecting a size 12 light cahill, made several false casts before laying the fly gently above the big trout. An instant later he was fast to a 16-inch rainbow.

Meanwhile, the "hatch" was on. The surface of the stream was soon dimpled by the rise of feeding trout. A steady upstream flight of hundreds of delicate transparent-winged insects began. This was a mayfly hatch, an event anticipated by the dry-fly addict for it is during hatches such as this that the tiny floating lure is at its best.

Mayflies are one of several groups of insects which spend their early life under water and during one or more stages of their life cycle serve as important items of food for trout. The aquatic insects found in trout streams may be divided into seven main groups: mayflies (Ephemeropta), caddis flies (Trichoptera), stoneflies (Plecoptera), dragonflies and damselflies (Odonata), nerve-winged insects (Neuroptera), two-winged flies (Diptera), and beetles (Coleoptera).

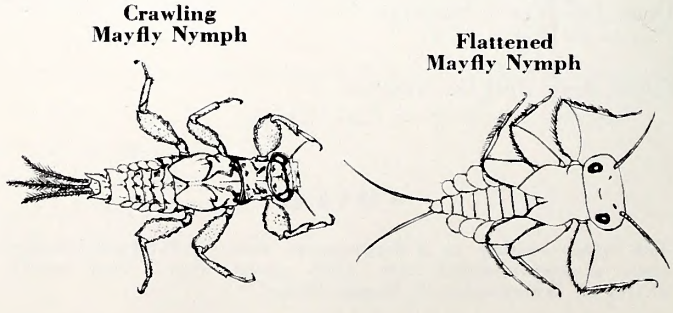
All members of the first four groups are aquatic during the early stages of their development and they are of the greatest interest to the angler since many of them are large enough to be used as bait or to be imitated by the fly fisherman. Although important as fish food, the larvae of beetles and two-winged flies are too small to be of direct interest to the fisherman.

In general, the peak abundance of nymphs of aquatic insects occurs during the late winter and early spring months when fish in trout streams must depend almost exclusively on these aquatic forms for food. Although some species emerge during each month of the year, the major period for transformation of nymphs into adults occurs during April, May, and June. In these months the food of trout is divided between the immature and adult stages of aquatic insects and terrestrial insects which fall into the water. During the summer and fall months the aquatic insect population is at a low ebb and trout become more dependent on the land forms of insects which accidentally fall into the water.

The mayfly nymph can be distinguished from all other aquatic insects by the presence of gills on the abdominal segments and external wing pads. Four main types of nymphs may be distinguished on the basis of habitat and appearance. For convenience we will designate the four types as "burrowing," "crawling," "flattened" and "swimming" nymphs.

The "burrowers," so named because they burrow in the mud and debris of the quieter sections of stream, are hairy in appearance and have prominent tusks. The "crawlers," which are very abundant in our streams, are stiff-legged and spiny and may be found on moss-covered rocks or in debris collected on the upstream side of boulders in swiftly flowing water. The "flattened" nymphs lie closely oppressed to stones in fast water. The head in particular is a flattened disc with the eyes on top. "Flattened" nymphs may be found by examining the underside of large rocks in the swift water of the riffles. The "swimming" nymphs are smooth and streamlined in appearance and are excellent swimmers. They may be found crawling or darting about among the rocks in both riffles and pools.

For many mayflies the period of transforming from nymphs to adult is the weakest link in the life cycle. At this time they are most vulnerable to trout and other surface-feeding fish. The newly emerged mayfly is dull in color and is commonly called a "dun" by fly fishermen. Upon leaving the water the dun flies to a nearby support and usually within twenty-four hours sheds the dull film, transforming to the final clear-wing stage called a "spinner" by anglers. After transforming to the spinner, the adult lives only long enough for the reproductive organs to develop, to mate and lay eggs in the stream. Mouthparts of the



adult mayfly are vestigial so that it cannot feed and most adults live for only a brief one or two days, in contrast to the year spent as a nymph. Because of the short life of the adult, scientists have named the mayfly group "Ephemeroptera," which means ephemeral, or short-lived, winged insects.

The eggs of mayflies are deposited in the stream and require from a few days to several months to develop. The period required for the egg to become a nymph varies with the species and with the water temperature. The common sight of mayflies dancing on the surface of swiftly-flowing water are the females in the act of depositing eggs. Females of some species crawl directly into the water and attach their eggs to a submerged rock or stick. The nymph undergoes several molts, and the time required for full development of the nymph usually requires a full year.

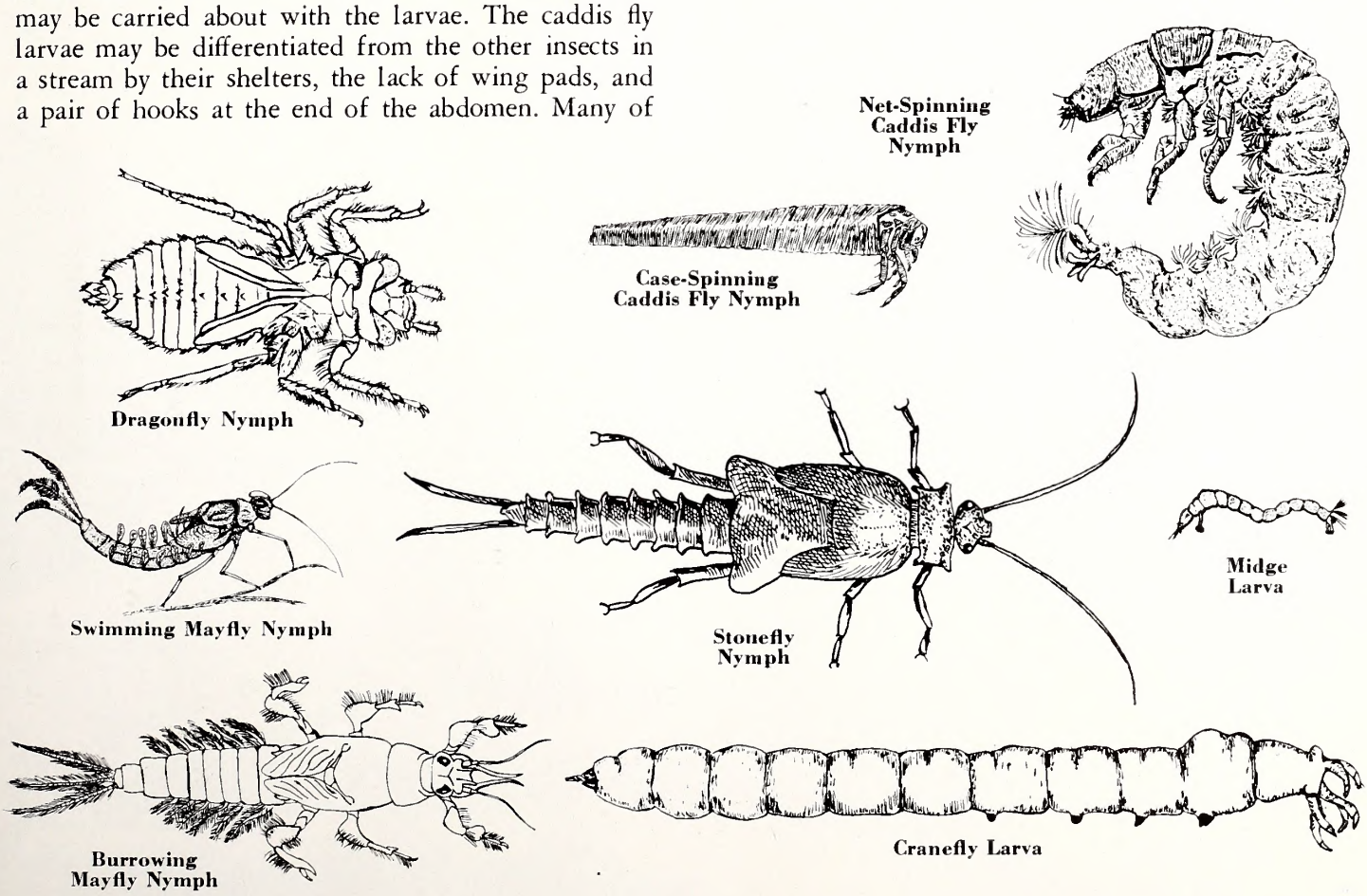
During the long period in which the mayfly lives in the water the nymphs are an important item of food for the trout. Sixteen percent of the total number of organisms found in the stomachs of several hundred North Carolina trout were mayflies in various stages of development. Of these mayflies, ninety percent were nymphs while only ten percent were adults.

The well-known "rock bait" and "stick bait" of the trout fisherman are larvae of caddis flies and are named for the very unusual shelters which they construct. These shelters, made of sticks, stones, bits of leaves or silken net, are attached to a rock in swift water or may be carried about with the larvae. The caddis fly larvae may be differentiated from the other insects in a stream by their shelters, the lack of wing pads, and a pair of hooks at the end of the abdomen. Many of these larvae may be located by examining rocks in the stream, particularly in the riffles. The adult caddis fly is mothlike in appearance with the wings held tentlike over the body. Many of the adults are secretive in habit but may sometimes be found clinging to the leaves, tree trunks or on shaded rocks along the stream banks.

The caddis fly life history is quite different from the mayfly cycle previously described. The adult female attaches the eggs to stones or twigs in the water or along the water's edge. A wormlike larva hatches from the egg and after a period of growth and development builds a cocoon in which it transforms into a pupa. It is during the pupal stage that the transformation to a winged adult occurs. When the adult is fully formed it cuts through the wall of the cocoon and leaves the water for the aerial existence which may last for several months. The aquatic existence from egg to fully developed pupa is commonly from nine to twelve months.

From the standpoint of importance as trout food the caddis fly larvae are the most important group of insects found in our trout streams. Twenty-five percent of the diet of trout in North Carolina streams has been found to be composed of caddis flies in various stages of development. The adults, although seldom imitated by the trout fisherman, are more important than adult mayflies and represent almost four percent of the total diet of rainbow trout.

•——————See INSECTS Page 16



HAWKS *Can Be Fun*

By MALCOLM G. EDWARDS

Supervisor, Western Management Areas

Illustrations by the Author

Suppose, for a change, we consider hawks objectively and not as creatures that are to be despised and wiped off the face of the earth. To begin with, they are all handsome, with lots of spirit and are the strongest flyers of all our birds. Take the peregrine falcon or "duck hawk" for instance. This bird can dive at over 200 miles per hour and even the common blue darter or Cooper's hawk is said to attain speeds of over 90 miles per hour for short distances. The redtail (often called squirrel hawk) can get in a "thermal" and spiral upward without a single wingbeat until completely out of sight.

A general deep-seated prejudice against hawks is unjustified. Most people like to shoot them and do so at each opportunity, but why not be honest and admit that even though they make a good target, they need not be exterminated. Mountains of evidence have proved that most species do more good than harm.

Besides being interesting to watch, hawks form the basis for one of the most fascinating of sports, namely falconry. Many stories on falconry have been published in the last few years. Some have been authenic, but quite a few have been written for the "sensational" type of men's magazine by persons who appear to be somewhat misinformed on the subject.

Falconry is among the oldest of sports and was correctly called the "sport of kings." In medieval Europe, only kings were permitted to keep certain types of falcons and the killing of these birds was punishable by death. Falconry goes back to the days before records were kept in Africa and India. The art was practiced in southern Europe as early as 560. In Asia, it was and still is a common way to put meat on the table; in Europe, however, it was usually considered a sport.

With the exception of a few places in England, France, and Belgium, falconry died out of western civilization for many years after the French revolution and the social changes that occurred in Europe at that time. The last decade, however, has seen an increase in interest, particularly in North America. At present, there are probably in excess of 200 practicing falconers in the United States and Canada. The Falconry Club of America has approximately 160 members, but there are many non-member enthusiasts. The centers of falconry interest appears to be Washington, D. C., and Denver, Colorado. There are very few participants in the deep South.

Generally speaking, there are three groups of hawks in North Carolina. The most common are the buteos or sailing hawks. These are large birds which are often seen perched on a dead snag or sailing effortlessly over the fields and forests. The three most common species of buteos are the redtail, the redshoulder, and the broadwing. A fourth, less populous species, is the marsh hawk. While these birds are most commonly seen and receive the blame for depredations, they are as a group much more beneficial than harmful. The redtail will catch rabbits and squirrels, and these no doubt form a considerable portion of their diet when they are abundant. However, the large number of rats and mice they consume more than balances the scale. As for catching birds, they are much too slow to take anything other than cripples. Buteos are generally considered useless for falconry as they do not have the necessary speed.

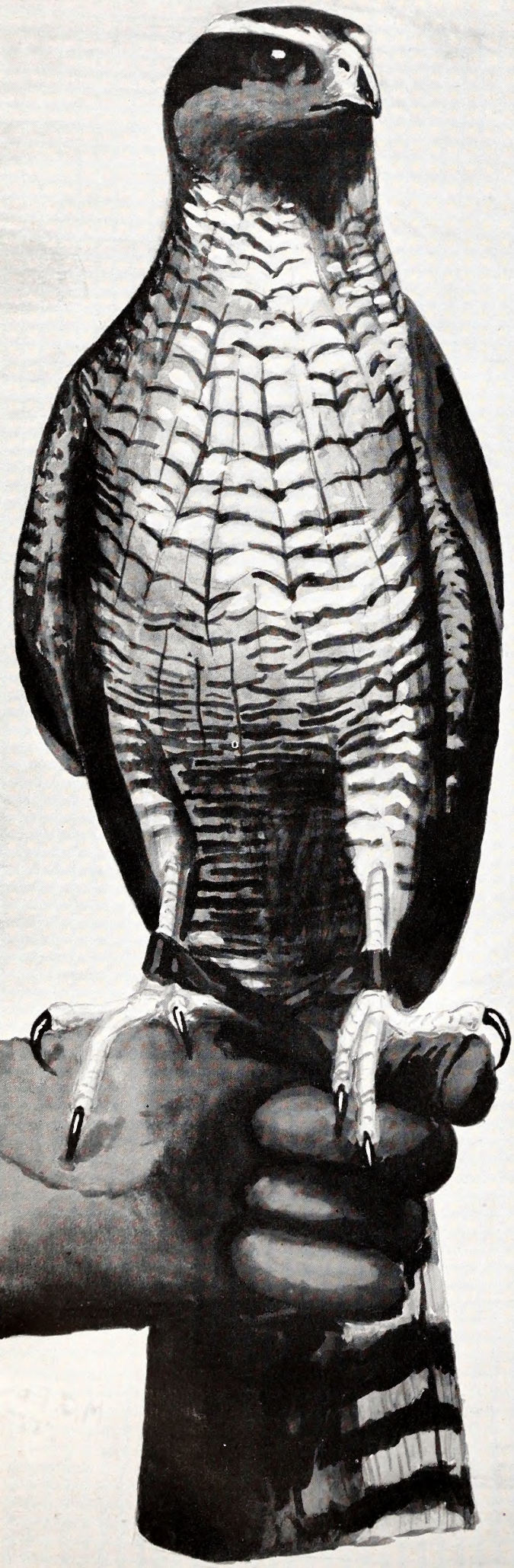
The real culprits, when it comes to predation on smaller animals, are the accipiters or "blue darters." These hawks, also called "blue tails," are fast, wary, and are seldom seen perched within gun range. They feed almost exclusively on birds and with their short, wide wings and long tail can dart and turn through the woods at terriffic speed. These are the hawks that flash down and take the biddies in the spring. These very characteristics make them excellent for hawking. The author, as a game technician, sometimes finds he is at odds with himself as a falconer, and in all fairness must admit that the Cooper's and sharp-shinned hawks are the raiders of the roost.

The third class of hawks in North Carolina are the falcons, and except for the sparrow hawk, are very rare. The falcons have long, pointed wings and are the real, genuine article when it comes to falconry. Their terrific speed makes them fascinating to observe. A few peregrines or duck hawks, some migrant pigeon hawks, in addition to the common sparrow hawk, represent the falcons in this State.

There are many differences in the three types of hawks. One of the biggest differences is in method of taking prey. The falcon swoops at terrific speed, striking with fist and raking with talons as he streaks by his quarry. The falcon cleanly outflies his victim. The shortwings or darters glide silently through the woods and hedgerows, darting speedily down on their prey and killing by grasping and piercing with long, sharp talons. The sailing hawks sit on a tall snag or sail slowly overhead, dropping suddenly on some luckless rodent.

Knowledge of these characteristics may help the beginner, since there is considerable confusion in hawk identification. Much of this is due to the females being about one-third larger than the males and to the fact

Falconry, says the author, is a fascinating sport which utilizes the speed, hunting ability, and intelligence of members of the hawk family. At left, a peregrine falcon or duck hawk is in hot pursuit of a blackbird. Once it gains the proper position overhead, the hawk will dive at the victim at speeds as great as 180 miles per hour and knock it senseless to the ground or catch it in flight with powerful talons.



that first-year birds are colored differently from adult birds. Characteristic coloration is usually well illustrated in most standard bird identification guides.

One of the most fascinating phases of falconry is the training of these, the wildest of birds, without breaking their spirit. Both young birds and adults can be trained.

Common North Carolina species which can be trained for hunting are, in order of their ability, Cooper's, sharpshinned, redtail, and sparrow hawk. The larger, more effective, falcons are rare in this State, except as migrants.

Falconers are as clannish as crows, but there is one point on which they do not agree. This is the popularizing of the sport and the assisting of novices. Several feel that there are too many falconers already and that encouraging people to take it up will make birds scarcer and harder to obtain. This is no doubt true where the peregrine is concerned. These hawks have not adapted to civilization and have become more scarce each year. On the other hand, redtails and sparrow hawks are comparatively easy to obtain and train and the Cooper's is among the best as a hunter. The point is this: anyone who has ever kept and trained a hawk will never kill one and usually becomes as dead-set against indiscriminate slaughter of hawks as others are for it. Even if they take a young bird each year to train, their crusading to stop the general killing of hawks more than makes up for the few they take.

The basis for control of trained hawks is through their dependence upon their trainer for food. The newly-caught hawk is first "manned," which means carried on a glove fist until he is tamed. He is fed bits of meat until he takes it from the trainer without hesitation. The bird is then placed on a perch and must step to the hand for food. The distance is lengthened until the hawk will fly 100 feet to the hand without hesitation. He may then be released without leaving. Falcons do not retrieve their prey. They proceed to feed, and if not found, are liable to revert to the wild. Needless to say, hawks with a full crop are not flown.

This is only a brief outline of training procedure. Anyone interested in reading further will do well to order a copy of the December, 1920 *National Geographic Magazine*. Copies are still obtainable from their Washington office. A wonderful and authentic article entitled "Falconry, The Sport of Kings" appears in this issue.

Training a hawk, such as the goshawk shown, requires much skill and patience. With a stout glove for protection, the bird is first taught to perch on the trainer's hand and then lured with bits of meat to return to the hand from a distance. The goshawk, a northern species that rarely appears in North Carolina, is the big fierce cousin of the Cooper's hawk.

The red-tailed hawk is often, and wrongly, called the "hen hawk," but its usefulness to the farmer in the destruction of rats, mice, and insects far offsets any depredations it may make. It is protected by law. A buteo, the redtail is slow flying and considered useless in the sport of falconry.

Modern day hunting with hawks is fascinating, but puts very little meat in the pot. Hawks, both wild and trained, miss more often than they hit. The author had the opportunity to observe a family (two adults and two juveniles) of sharpshinned hawks one day last fall from daylight until noon. They started hunting as soon as it became light and one of the adults took a bluejay during the first hour. The other adult took a small bird about eight-thirty and one of the young caught another bluejay just before eleven o'clock. The other young did not make a kill during this period despite numerous chases. These birds circled and swooped repeatedly during this time, apparently putting forth their best efforts.

Hawks, like dogs, horses, and other animals, are individuals. They look and act differently. Two birds out of the same nest may be totally different—one full of spirit and the other timid. Trained birds are quite capable of and often do show affection for their owner. All in all, they are fascinating creatures.

Hawks are much more than just predators to be shot. Watch them closely and with surprisingly little effort you can become interested in them. Give yourself and the hawks a chance.

Forestry and Fishing

Reprinted from *Sport Fishing Institute Bulletin*

Water doesn't burn. Yet, a single match, misused, can destroy your fishing. Fire can change a clear, cool, even-flowing stream into a muddy, raging torrent after heavy rains, and a dry river bed during times of drought. In forested areas, what we do to the woods may decide your angling success.

The soil is really a reservoir. Water is stored between the soil particles. The soil can store most of the rainfall. Some of this water in the soil is used by the trees and other vegetation. Some emerges as cool springs—as "leaks" in the huge reservoir.

If the rainfall runs off the land, instead of soaking in, the soil reservoir gradually loses its water. There is less moisture for the trees and other plants. The flow of springs diminishes, or stops entirely.

Except during periods of rain, or fast-melting snow, the streams receive all of their flow from "leaks" in the ground-water reservoir — the flowing springs. If the springs go dry, the stream goes dry, too. Fish can't live in a dry stream bed. Their food can't grow in a dry stream bed, either.

Rain, when it reaches the ground, will either soak into the soil or run downhill to the nearest stream. If most of it rushes to the stream, the water will overflow the banks. There will be floods. Floods destroy property. They harm fishing, too, by destroying fish food and fish habitat.

So, it's all-important that much of our rainwater soak into the soil. If most of it runs off the land, our streams will be flooded at times, and dry at other times. They will not be suitable for fish life.

How much of the rain soaks into the underground reservoir depends on the cover on that reservoir. On a bare hillside, most of the water will run down the surface. If a sponge is placed on this hillside, to hold the water until it can percolate into the soil, very little water will run off; most of it will soak into the sponge and on into the soil.

In the forest, Mother Nature provides a sponge. The leaves fall from the hardwoods each fall; pines and other conifers lose their needles little by little, too. In time, the leaves decay, forming a thick layer of humus

•——————See FORESTRY Page 19

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Governor Hodges Makes Commission Appointments

Early in June Governor Luther Hodges made three appointments to the Wildlife Resources Commission. In District one Orville L. Woodhouse, prominent Currituck County business man and farmer was reappointed for another six-year term. In District two, Robert M. Carr, Wallace, was appointed to succeed Robert Sadler, Bayboro. Carr is a former legislator, and is a prominent oil distributor in Duplin County. G. E. Beal, in District three was reappointed for another six-year term. Beal resides in Red Oak, is a farmer and tobacco warehouseman, and has been active in wildlife affairs for a number of years.

* * * *

Walter Anderson New Protection Division Chief

At a meeting in Raleigh June 13 the Wildlife Resources Commission appointed Walter F. Anderson as chief of its wildlife protection division. Anderson succeeds W. C. Bumgarner who resigned last April. With nearly 20 years experience in law enforcement work, Anderson is considered highly qualified to serve in this capacity. Anderson is a graduate of the F.B.I. Academy in Washington, D. C., has served on the Charlotte and Winston-Salem police forces, and has headed up the State Bureau of Investigation and Prisons Departments.

* * * *

1955-1956 Hunting Regulations Set

The N. C. Wildlife Resources Commission has set the official rules and regulations for the 1955-1956 hunting seasons in North Carolina. The rules were formulated after a set of tentative regulations had been presented to sportsmen at a series of nine public hearings, one in each of the nine Commission districts. Other than changes of dates adjusting the hunting seasons to the 1955-1956 calendars, there were very few changes over last year's rules.

Printed copies of the new regulations are in the process of production, and will be in the hands of license dealers by August 1, when the hunting licenses and combination fishing and hunting licenses will go on sale.

* * * *

Combination Fishing-Hunting Licenses Expire July 31

If you have been fishing for the past few months on a combination fishing-hunting license, you will need a new one August 1. Current licenses expire July 31.

Spying Eye OF THE CAMERA

Photo Feature by Jack Dermid

Most birds zealously guard their family secrets by building their nests and raising their young in clever hiding places or in inaccessible locations. They are seeking security from predators and protection from the weather rather than privacy from the camera, and once they have become accustomed to the shining lens and clicking shutter, their secrets are not difficult to capture on film.

A simple setup is to place the camera close to the nest and to trip the shutter by remote control from a distance with a string or with electricity and an electromagnet. The degree of wildness varies with the species of birds and even among individuals of the same species. With most songbirds, the camera can be placed at the nest and photography begun almost immediately; but with some of the wild game species, it may be necessary to gradually move a dummy camera up to a nest over a period of several days and after the bird is used to it, substitute the real camera for picture taking. Sometimes the photographer can remain in the open a few feet from the nest; at other times, he may be required to hide in a blind some distance away.

Success is easiest when young are in the nest or during the last days of incubation for those birds whose young leave the nest shortly after hatching, like the quail or killdeer. Parental instinct is greatest then, and there is little danger of the nest being deserted. It is surprising how little heed many birds give the camera after the first exposure or two. The flashbulb and noise seem to be little more than a nuisance to them.

Here are some glimses of the nesting season as seen through the camera's lens.

PRIVACY PREFERRED. This clapper rail, or marsh hen, did not appreciate the presence of a camera while incubating its clutch of seven eggs and is shown in the process of building a screen of marsh grass. The rail is a secretive game bird of our coastal salt marshes where its loud, rattling calls are heard more frequently than it is seen.

MAMA QUAIL RETURNS TO HER NEST. Each time this quail returned to her nest, she followed a definite routine. She would sneak up to within a foot or so of the nest, pause a few moments to look around, and then run into the nest at full speed, going as far to the rear as possible (left photo). There she would remain crouched and motionless for a minute or more before moving around to face outward. Below: After carefully turning and arranging her sixteen eggs, she would finally settle down to the job of incubation.

ONLY A MOTHER WOULD CLAIM THESE YOUNGSTERS. Greatly resembling pigeon squabs, nestling mourning doves are about as ugly and homely as baby birds can be. The youngsters grow rapidly, however, and leave the nest in about two weeks. Once adult plumage is acquired, they have a graceful beauty that is difficult to surpass.

TATTERED AND TORN. Hatching time is near, and the ragged breast feathers of this killdeer indicate she has been faithful to the task of incubation. She literally watched the tobacco plants grow up beside the nest, for the nest was discovered when the plants were set out.

BABY BLUE EYES. A young crow has appealing bluish eyes and lacks the wild look of the brown-eyed adults. Taken from the nest during babyhood, crows make interesting and mischievous pets.

HOUSEKEEPING. A brown-headed nuthatch emerges from its nesting hole with the dropping of one of its five youngsters in its bill. Right: It returns with an insect—a lot of work is required to raise a bird family.

Pardon Me WHILE I SCRATCH

by Jim Lee

Photos by the Author

Every family has its collection of favorite tales about the screwball antics of some member, and ours is no exception. Most of our stories involve Cousin Bill, who finally had to be put away for his own safe-keeping. One story about Bill didn't seem so funny at the time it happened, but in retrospect it seems rather ridiculous. Bill liked to wander through the woods on a Sunday afternoon, and when he found a likely spot he'd settle down for a bit of meditating . . . usually propped against the base of a tall pine. One afternoon Bill had some particularly serious meditating to do, so he fortified himself with a toothpick—which he casually clipped from a vine growing on the pine tree. After whittling a keen point on the twig, he carefully picked the remains of Granny's fine Sunday dinner from his teeth, and then chewed on the twig philosophically as he relaxed in the warm sunshine. As the sun sank behind the hill he got up and headed for home and supper. Granny prided herself on her good cooking, and it took a bit of whispered explaining on Bill's part to calm her when Bill gagged on the first bite of supper. He couldn't swallow; his throat was so swollen that he could hardly talk. You guessed it—that vine from which Bill made his toothpick was poison ivy!

It took about two weeks for the swelling to settle down to the point where poor Bill could eat solid food again, and after eating soup through a tube for all that time he could never be persuaded to eat soup again. Nor could he be persuaded to make a toothpick from poison ivy again either. He was lucky at that—if he hadn't been in a spittin' mood that afternoon there's no telling what the damage might have been to his intestinal system. You can be sure that from then on Bill regarded poison ivy and its relatives with a great deal of respect.

A lot of people let themselves in for considerable discomfort through lack of knowledge concerning our poisonous vines. In North Carolina there are three closely related species that can cause dermatitis, or irritation of the skin. More confusion exists regarding the names of these plants than about any other group of commonly known plants. Some writers insist on spelling as one word any plant name that could conceivably give a false impression if spelled as two words. Since we are not dealing with a true ivy, these writers would have us write "poisonivy" . . . one word. Others prefer to hyphenate in order to distinguish between true relationships and false relationships . . . thus we sometime see "poison-oak" with a hyphen to indicate that this really isn't an oak. Poison-ivy, poisonivy, or poison ivy . . . it's the same plant and the same itch. You pays your money and you takes your choice.

The most common of the three poisonous plants is poison ivy. A member of the Sumac family, its scientific, or Latin, name is *Rhus toxicodendron* variety *radicans.* Each leaf consists of three leaflets, which are glossy green. The leaf distribution is alternate; one leaf comes off the stem on one side and the next higher or lower leaf branches off from the other side of the stem. Box elder and the various species of ash often have three leaflets but the leaves are opposite—where one leaf branches off from the stem there is another on the other side of the stem to match it. Virginia creeper is also confused with poison ivy, but bears five leaflets rather than three. The stem of poison ivy is generally smooth, without fine hairs, and commonly grows around another plant for support. Where no support is available the vine will resemble a shrub and grow in a bushy form. The fruit appears in clusters, which ripen into waxy white berries. Although most of the poison is concentrated in actively growing parts such as the tips of new leaves, poison is present in all portions of the plant including the bark of old stems. The poison is persistent, and cases are known of people being poisoned months after the plant died.

Not so common, but equally dangerous, is the oakleaf poison ivy, or poison oak. The first to be named, it bears the name *Rhus toxicodendron,* although it may well be a variety of poison ivy, which carries the suffix "variety *radicans.*" At any rate, it's mean stuff to tamper with. Oakleaf poison ivy commonly grows in the shrub form, although it too may be a climber on occasion. As with the common poison ivy, the oakleaf variety has three leaflets, but these are bluntly lobed and the individual leaflets resemble the leaves of some oaks. The common poison ivy leaflets are sharply notched or have smoothly-margined edges. Poison ivy has hairless stems; oakleaf poison ivy stems are covered with many small hairs. Oakleaf poison ivy is an eastern species. On the West Coast another species is called poison oak; thus to be proper in our name-calling we refer to the eastern form as oakleaf poison ivy. The next time your fishing companion stumbles and sprawls into a thicket of the stuff, console him by reciting the fine distinction between the two. Then help him scratch.

The third species is poison sumac. The familiar winged sumac of old fields, with its rusty red head of berries in the fall of the year, is a close relative of the

poison sumac, but may be distinguished by its "wings" —small ribs which grow along the stem between the leaflets. Poison sumac, which grows only in swampy places, lacks these wings and the leaves droop more than those of the winged sumac. The poison sumac leaves have from seven to thirteen leaflets on one reddish central stem. After retrieving your favorite bass plug from a healthy shrub of poison sumac, your physician may inform you that *Rhus vernix* is the most potent of the three poisonous plants and occasionally grows along the water's edge where the unwary fisherman can tangle with it, to his subsequent dismay. The fruit of poison sumac, like that of oakleaf poison ivy, resembles that of the common poison ivy.

The poison that causes itching is a non-volatile substance called urushiol. Early references place the blame on another oil produced by the plants, called toxicodendrol after the toxicity of the stuff. There again we find little consolation in knowing the name of the glop. The fact that urushiol is non-volatile, or not readily vaporized, does not prevent droplets from mingling with the smoke of burning plants. You cannot acquire the poisoning just by looking at the plants, but sensitive people can be poisoned by standing in the smoke of burning leaves and vines. By penetrating the skin through pores, the oil reaches the tender layers under the skin and causes irritation, followed by blisters. The blisters contain only minute quantities of poison, and irritation cannot be spread by breaking the blisters. One should not, however, break the blisters since germs can then enter and cause infections.

History doesn't record the remarks of the first person to have been poisoned by one of these plants, but the remarks must have been pretty choice. The colonists encountered poison ivy soon after their arrival, and their recommendations for treatment reflect the rough-and-readiness of the times; they employed a poultice of gunpowder and milk. Since then just about everything under the sun has been tried. Let's face it—the only sure-fire way to keep from itching is to stay out of the stuff to begin with. If you are in contact with leaves or stem, wash yourself as soon as possible after contact. A strong laundry soap helps in washing, but don't use a brush. Yearly injections of anti-poison ivy vaccine seems to help in some cases—for the extremely sensitive outdoorsman it's worth a try.

Most often the first inkling we have that we've been poisoned is when we wake up in the middle of the night and find we have scratched and scratched in our sleep until the raw and burning skin is covered with blisters. This may happen as much as a week after exposure, depending on the toughness of the skin in the affected area. By then it's no longer a matter of preventive but rather a problem of treatment. Scratching may temporarily relieve the urge to do something about the itch, but all that is really accomplished is that the skin is opened to other infections. A much more effective means of reducing the irritation is to apply one of the

The oakleaf poison ivy below has bluntly lobed leaflets and the stem and leaflets are covered with fine hairs. This plant commonly grows as a shrub . . .

. . . while the common poison ivy, with its sharply lobed leaflets ordinarily clings to another plant for support. Common poison ivy leaflets are slick and glossy.

many commercial poison ivy remedies. Some of these preparations contain mild local anesthetics which reduce the pain, while other agents in the medicine aid in drying up the blisters. Most of the liquid preparations contain alcohol, which helps in reducing the blisters. Among the non-commercial remedies is one which Frank Meacham of the N. C. State Museum recommends: bathe the rash with a dilute solution of sodium thiosulphate in warm water every few hours. Sodium thiosulphate may be purchased as crystalline photographers' hypo, and is harmless to skin and clothing. Some of the commercial remedies do stain clothing.

Some paragraphs back we probably lost one group of our readers—the lucky folk who seems to enjoy a natural immunity to ivy poisoning. They handle it, they wallow in it, they even chew it and never seem to be bothered. How do you go about getting this kind of immunity? You don't. Everyone is born with the same kind of immunity that they enjoy, to a greater or lesser extent. For most of us, that immunity is lost the first time we come into contact with the poison. Most of us know that a person of one blood type cannot safely receive a transfusion from a person of another type. Actually, the first transfusion would not result in a reaction. The blood, however, would build up anti-bodies which would react with the wrong type blood from a second transfusion, and the reaction is usually fatal. Similarly, the first exposure to ivy poisoning does not result in a rash, but rather the development of anti-bodies in the blood which react upon a later exposure. The fortunate few have never acquired the poison ivy anti-bodies in their systems. They can acquire them, however, with *sufficient* exposure, as many have discovered after boldly demonstrating their immunity. One demonstration too many, and no more immunity. In fact, once the immunity is lost they seem to be more susceptible than anyone else. New-born babies and Eskimos can safely handle the stuff the first time, having no anti-bodies in their systems. Afterwards they catch it too. The next time one of your Eskimo friends drop in for a visit, try it and see. Just in case he's already been exposed, though, better have a good hiding place ready. Somewhere deep in a poison ivy thicket.

INSECTS

from page 5

Another group of insects familiar to many trout fishermen are the stoneflies. Certain species may grow to a length of one and one-half inches and provides a good mouthful for a hungry trout. It is very hardy on the hook and serves as excellent bait. The stonefly nymph is similar to the mayfly nymph in shape except for the lack of abdominal gills on all but the first abdominal segment, and they always have two tails while many of the mayflies have three. The general life history of the stonefly is very similar to that of the mayfly. The most important difference is in the method of emerging from the nymphal skin. After crawling from the stream to a rock or twig the adult breaks through the nymphal skin and flies away. The cast skins of these insects are often found fastened to boulders or to the underside of a bridge, which is an excellent place to look for the adults as they prefer a damp shaded resting place near the stream.

The dragonflies and damselflies, the adults of which are commonly called snakefeeders or snakedoctors, are another group of insects which spend their immature stages in the water. Although the nymphs may occasionally be an important item of food for trout, their importance as food may be more than offset by their predaceous habits. The food of dragonfly nymphs is composed of other aquatic insects and small fish. The nymphs occasionally do a great deal of damage to fish in hatcheries by the destruction of fish fry.

The hellgrammite, found in some of our larger trout streams, is familiar to all anglers. The life history is similar to that of the caddis fly except that the eggs are laid out of the water and the pupal stage does not occur in the water.

Although many beetles are aquatic, the only one likely to be found in our trout streams is the riffle beetle, which spends both immature and adult stages in the water.

The immature stages of many of the two-winged flies occur in the trout streams. However, with one exception they are very small and are not likely to be noticed by the casual observer. The larvae of the two-winged flies may be distinguished from the other groups by their wormlike form and lack of true legs. The largest of these flies found in trout streams are the wormlike larvae of craneflies. These larvae may grow to over an inch in length and are found buried in the sand and silt of stream bottoms or in piles of leaf drift accumulated in eddies and backwaters. The larvae are very abundant in the early spring and provide excellent bait for trout. The little punkies, or no-see-ums, which are so irritating on summer nights near a mountain stream, spend their immature stages in the water. The larvae are very small and needlelike in form and are seldom of great importance as food for trout.

One group of two-winged flies which are important are the midge flies. The larvae of these little flies are of tremendous value as fish food. Almost all species of freshwater forage and game fish at some time during their life feed on midge larvae, which also serve as food for many other aquatic insects. Midges occur in both lakes and streams. If you have spent any time around a lake during the summer you are familiar with the adults which are attracted to lights. The mosquito-

PROTECTOR OF THE MONTH

C. L. Garland

One of our best known and most highly respected protectors in the western end of our State, Charlie L. Garland was born in Graham County on May 12, 1893. Although his entire formal education was received in the public schools of his home county, his reputation for extensive reading and study, particularly in regard to wildlife affairs, has earned him a wide reputation as a student and conservationist. "Uncle" Charlie has had long experience with enforcement activity, belonging first to the Sheriff's Department in Graham County where he worked 3½ years before starting his career in wildlife protection under the Department of Conservation and Development in 1937.

Mr. Garland is a veteran of the First World War, during which he was a member of the 81st Division, and in which he saw extensive service in France until Armistice Day. He is a member of the Missionary Baptist Church, a member of the Masonic Lodge, is married and has one daughter and five sons.

It's the Law!

Question: Is it lawful to train hunting dogs in this State during the closed season?

Answer: Under the provisions of the North Carolina game laws, it is not lawful to "take in any manner . . . any wild bird or animal" during the closed season. The statute defines "take" as meaning to pursue, hunt, capture or kill and all lesser acts such as disturbing or annoying birds or animals, whether or not such activities result in the taking of such birds or animals. However, the law specifically provides: "It shall be lawful for individuals and organized field trial clubs or associations for the protection of game, to run trials or train dogs at any time: Provided, that no shotgun be used and that no game birds or game animals shall be taken during the closed season by reason thereof." From the above, it is apparent that dogs may be trained when the owner is not carrying a shotgun, but only so long as game birds and game animals are not molested as a result of such training activity. In the usual sense, training consists primarily of teaching dogs to be obedient, and to become accustomed to loud noises while stalking game. Good sportsmen endeavor to prevent molestation of nesting birds or of game animals with young, by refraining from conducting any training exercises until the very late summer or early fall.

ENFORCEMENT RECORD FOR APRIL

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of April, 1955:

Persons checked	**34,870**
Total prosecutions	**870**
Total convictions	**830**
Total fines collected	**$4,139.60**
Total costs collected	**$5,995.48**

No part of the fines or costs collected are paid to the Wildlife Commission or its personnel. All fines and any arrest or witness fees charged in favor of Wildlife Protectors are paid into the school funds of the counties wherein the violations occurred.

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like adults are non-biting but often create a nuisance because of the tremendous numbers which are present at times. The midge larva is wormlike and burrows in the bottom or lives on the vegetation in lakes and streams. The larvae are not abundant in swift water, but when present they are eaten in large numbers by trout.

This brief introduction should serve to illustrate the changing and varied life found in our trout streams. The wonders of nature are never so evident as in the wonderful adaptations for life found in the inhabitants of a roaring mountain stream. Most trout streams contain several hundred different species of aquatic insects. All of them belong to one of the seven major groups mentioned, and by careful observation any angler can learn to recognize them in a short time.

The next time the trout are off feed, spend some time getting acquainted with the forms of insect life in your favorite stream. Perhaps you will find the bait that will turn the trick for the day.

Dear Joe

Joe is not one individual. He is a sort of composite of all the sportsmen of North Carolina. Joe goes hunting and fishing as much as time will permit, and questions frequently arise in his mind about the wildlife on his favorite stamping grounds. Sometimes he cannot answer these questions himself; so he writes the Wildlife Resources Commission. These letters are our answers to Joe.

JOE DOAKS

Wildlife Resources Commission
Raleigh, N. C.

Gentlemen:

What damage was done to wildlife foods by the freeze of March 17?

Very Truly Yours,

Joe Doaks

Dear Joe:

The big frost that severely damaged the peach and other fruit crops in March came at a time when some wildlife foods were blooming. The best way for us to assess the damage to the wildlife food supply is to look at reports from the biologists in the nine districts who have surveyed the damage in their districts. These reports are a good indication of the food supply that will be available to game birds and animals in the fall when these foods should mature.

District 1 — The consensus in regard to this district was that the frost did no appreciable damage in view of the fact that the oaks, hickories, wild cherry, wild grape, wild crab apple, wild strawberry, blackberry, persimmon, and greenbrier came into bloom after the frost and appeared to be putting on a good bloom as of the middle and end of April. The cold snap may have delayed slightly the maturation date of some of these fruits but it is believed that little or no fruit was actually destroyed.

District 2 — Some damage did result on the acorns of the red oak group. We are informed that in the vicinity of the Orton Plantation in Brunswick County turkey oak and southern red oak did not set a heavy crop last year and that about 50 per cent of these immature acorns have turned black. Blueberries were slightly damaged but they have apparently resumed blooming after the frost. Other species were not sufficiently advanced to be damaged.

District 3 — Wild plum was apparently the only species that was at least partially in bloom at the time of the freeze. These may have been hard hit. Most of the oaks, hickories, and walnuts were not in bloom at the time of the freeze and apparently suffered no damage. The same is true of wild grapes and old growth of the blackberries. It is not felt that the wildlife food production was materially affected by the late freeze.

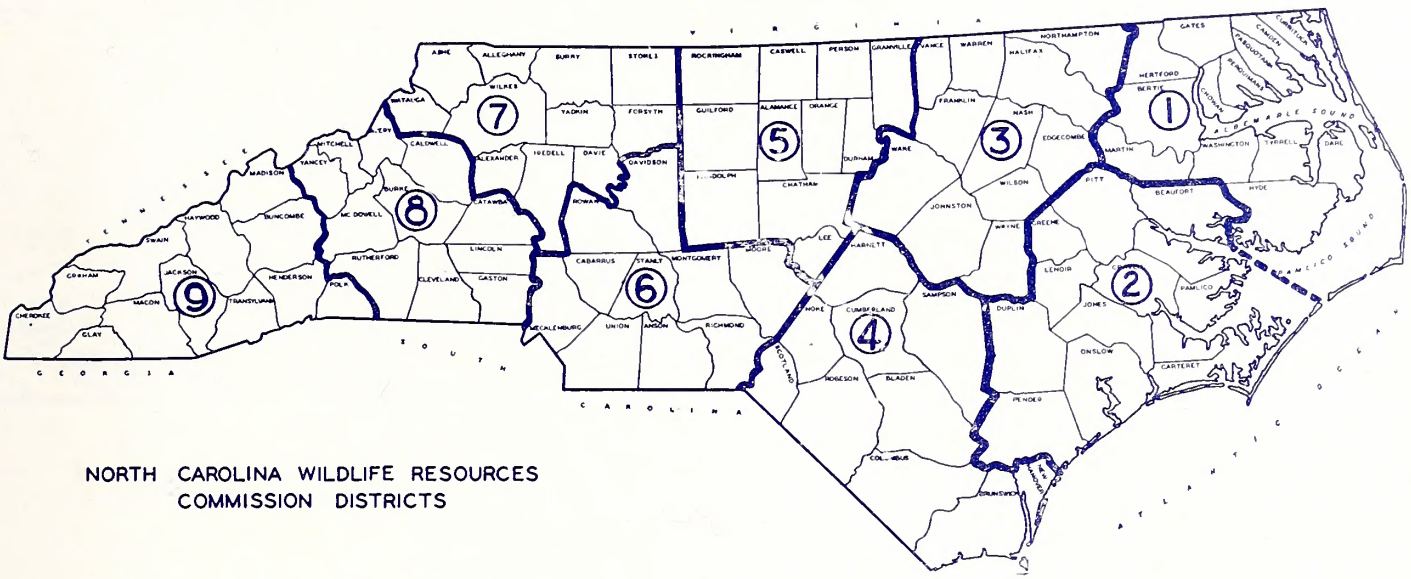
District 4 — The hardest frost damage was on the fleshy fruit of blueberries, huckleberries, cherries, and plums. However, the wild varieties were not damaged as much as the cultivated ones. Furthermore, these have been observed to bloom since the frost. Legumes such as lespedeza, beggarweed, and partridge peas were somewhat retarded but it is not expected that the seed crop will suffer. The oaks, hickories, grapes, and sumac were not affected.

District 5 — No significant damage to wildlife food plants occurred since only redbud and tulip poplar had advanced into foliage. Oaks, hickories, beech, greenbrier, dogwood, persimmon, wild grape, huckleberry, sumac, pokeweed and others had not put on any growth and, as far as could be determined, were not damaged.

District 6 — There appears to be no damage in the Sandhills section even to the wild plum. However, much or most of the wild plums and wild cherries were destroyed in the Piedmont counties of this district. It is also reported that possibly up to 50 to 75 per cent of the red oak blooms may have been damaged.

District 7 — Cherry trees, both wild and domestic, apparently suffered severe damage, as well as the apple trees in the orchard section. Plum trees, however, survived the severe weather and are expected to produce a good crop. Other species apparently were not affected.

District 8 — The only apparent damage in this district was in the central and southern counties. Three species seen blooming prior to the freeze were chickasaw plum, serviceberry, and redbud. None of the oaks and hickories were observed at this time to be in bloom.



This map showing the nine Wildlife Resources Commission Districts will help you find the areas mentioned in the article. Districts 1 through 4 are mostly coastal plain counties; Districts 5 and 6 are piedmont counties, and Districts 7, 8, and 9 are in the mountains.

District 9 — Apparently most of the timber species were still in the dormant stage throughout most of the mountain region, except possibly in the southern tier. It was pointed out by our biologist in this district that two hail storms, the most severe of which occurred on 24 April, may have had as serious effect, if not more so, than the frost in that they apparently knocked much of the bloom off the oaks.

In summarizing, we feel that the sum total of damage by the March 17 frost was relatively scattered and light and that no serious state-wide damage was inflicted.

Best wishes
Frank Barick

FORESTRY

from page 9

on the floor of the forest. This humus is an excellent sponge. It holds lots of water, gradually letting it pass into the reservoir below.

Forest fires burn the sponge as well as the trees. They destroy the all-important rain-collecting roof to the underground reservoir. With the humus destroyed, much of the rain will run downhill. The streams will be flooded during heavy rains, and will be dry during periods of drought.

Lumbering, properly conducted, need not destroy the ability of the soil to absorb water. We can cut the mature trees without destroying the humus sponge. From the standpoint of fishing, the leaves which have fallen for centuries on the forest floor, and decayed there, are more important than the trees themselves. Young trees, growing in place of the mature ones which were cut, drop their leaves, too. We can harvest the timber of the forest, and still have good fishing streams.

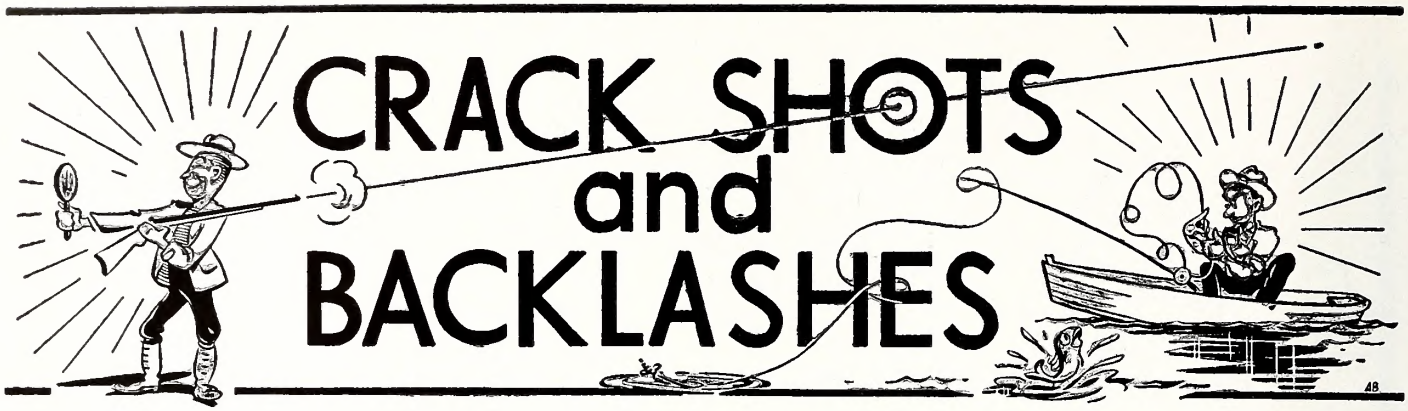
The forest affects the water temperature, by shading the stream. The amount of water which soaks into the soil affects the stream temperature, too.

Each species of fish has its own temperature needs. Trout want cold water. Smallmouth bass want cool water. Largemouth bass want warm water. If the temperature is too low, the fish become sluggish; they don't eat enough food to grow on. If it's too high, they die.

The cool springs tend to have a fairly even temperature. When their flow is reduced, the water in the stream in summer is warmer. A good trout stream may become too warm to support trout, or a smallmouth bass stream may become too warm to support these fish. The springs not only furnish the water for the streams, but they affect the temperature of these habitats for fish.

There's another important reason why most of our rain must soak into the ground. If it rushes down the hillside instead, it carries some of the soil with it. This silt destroys the food of the fish, and muddies the water. The topsoil, which is badly needed on the land, harms the fishing when it washes into a stream. Water which flows from springs is clear. It carries some plant nutrients with it. These enrich the water. They make it possible for food organisms to grow. But, water flowing from springs also leaves the soil behind, on the land, where it belongs.

So, in wooded country, what we do to the forest affects your favorite outdoor sport. Remember—with good forestry we can have good fishing; but, poor forestry means poor fishing.



DEPARTMENT OF LETTERS TO THE EDITOR, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

For several weeks "Crackshots and Backlashes" has been bombarded with letters from folks who make suggestions on how to rid our woods and fields of stray dogs and feral house cats. Many of these suggestions involve the indiscriminate killing of these beasts without regard to possible ownership. There is no question that many dogs and cats are homeless strays that destroy quantities of game.

WILDLIFE would like to have published these letters, but does not wish to stir up a matter which is already highly controversial. North Carolina now has a system of county dog wardens. In many cases this system is working and accomplishing a reduction in stray animals. The essential reason behind this program is rabies control. Rabies is a present and real danger in North Carolina. An outbreak in our fox populations is a serious matter.

We would like to make two suggestions which might go a long way toward the total elimination of stray dogs and cats:

1. Expand and improve the dog warden system.

2. A public education campaign to discourage the cruel practice of dumping kittens and puppies out in the woods to fend for themselves.

We are now in the time of year when game species are most vulnerable to stray dogs and cats. Somewhere near half the problem would be solved if pet owners would keep their animals confined.

* * * * *

The usual crop of fawns and other woods babies is showing up in various back yards, orphaned by the good intentions of people who believed them to be helpless. Without the interference of mankind, Nature can very well take care of her own. Taking young game animals this time of year is illegal.

"Dear Sir:

"Thursday May 5, some people found a baby wild rabbit while cutting their grass. They caught it and then let it go. Some boys caught it and tormented it for awhile, and it got away. Later I caught it and my friend and I took it to my home. We put it in a box over night. The next morning we put it in a briar patch.

"We decided on this because I read in WILDLIFE that wild animals should be left wild. I enjoy my WILDLIFE magazine very much. It was given to me on my tenth birthday.

Yours truly,
Connie Crocker
Guilford College, N. C."

Thanks, Connie, for setting a fine example. It is gratifying to know that some of our harping on the subject is reaching sympathetic ears.

SCHOOL PAYS OFF

Students at State College's Freshwater Sports Fishing Institute at Fontana, Charles B. Blackburn of Annandale, Va., and Dr. Courtland H. Davis, Jr. of Winston-Salem, proudly display the results of their instruction at the school held in May.

This, from Texas, is a REAL compliment!

"Dear Sir:

"Yesterday I noted your magazine while I was at the Game Commission office. I asked to borrow it and liked it so much I want to subscribe for two years.

"We know our Texas magazine is the largest and best, but yours is big and good.

Sincerely,
Mrs. Esther Menn
Austin 4, Texas"

* * * * *

The boys in Granville County are making every effort to profit by the recreational facilities offered by Kerr Reservoir. Let Onis Peed, Oxford, tell you about it.

"Dear Sir:

"First, I will bring you up to date. Granville County finally acquired a twenty-five year lease, from the Army Engineers, on Hibernia which consists of 240 acres to be developed as a recreational area. We immediately went to work putting in roads, clearing land, and cleaning up. We obtained the assistance of Ralph J. Andrews' office and the assistance of the North Carolina State College School of Design. Professors Thurlow and Clarke helped us very much by drawing for us a long-term plan of development. This plan of development will be formally presented to the Granville County

MEASURE THEM BY THE YARD

Two square yards of fish is probably the best description of the catch of the Purcell's of Greensboro, who landed most of their fish at Kure Pier near Wilmington.

Recreation Commission on Wednesday, May 18, at 8 o'clock in the Granville County Courthouse. We are making this right much of a publicity stunt because immediately after this meeting we expect to put on the market $15,000 or $20,000 worth of Recreational Bonds and start our development in the big way.

"We know how interested you have been in Granville County and would like to have you come Wednesday afternoon about 6 o'clock and join us in entertaining these students and the dignitaries from State College and the Army Engineers at a supper to be held at Rays' Lake. This Lake is just on the outskirts of Oxford and you will have no trouble in locating it. We shall expect you to arrive about 6 o'clock and stay through the meeting, which will convene at the courthouse at 8 o'clock. We are going to invite Herbert O'Keef of the News and Observer, maybe you could come together. We shall look forward to seeing you at that time.

Very truly yours,
C. O. Peed, Chairman
Granville County Recreation Commission
Oxford, N. C."

"Dear Sir:

"I have received my first two issues of this fine outdoor magazine and now realize I have really been missing out a wonderful thing. I am interested in buying back issues of WILDLIFE IN NORTH CAROLINA. I don't care how old they would be.

"I will appreciate your telling me where I might obtain the old copies and for how much per copy.

"Wonder if you might write a small story somewhere in one of your next issues, giving in detail just what plugs and baits you would recommend one to use with a spinning outfit casting for bass and perch.

"Again, congratulations on a fine magazine, from a fellow who has aspirations of becoming someday, a game protector.

Yours truly,
J. D. Savage
Ahoskie, N. C."

Back issues of WILDLIFE are hard to locate. Many people have them bound in sets. Maybe others will offer to help you obtain some. As to the best lures to use for spinning, your tackle dealer ought to be highly qualified to give you the information. Many baits are designed to catch fishermen, but many others actually catch fish.

"Dear Sir:

"I am very much in favor of a life subscription for the NORTH CAROLINA WILDLIFE. Then the expiration of same could be forgotten, as suggested by Glenn T. Youngblood. I am a life member of the National Rifle Association.

"My favorite shooting is target, snakes and predators.

"The Dog Warden in Rockingham county has done a wonderful job and is still 'on the ball' for wild dogs.

"The WILDLIFE magazine is a mighty fine one. Wishing you continued success.

Very truly yours,
Roy Kendrick
Leaksville, N. C."

"Dear Sir:

"Enclosed is my check for $1.00 for a two-year subscription to WILDLIFE. Dad and I have been sharing his subscription, but I find that I miss too many articles that are of interest to me.

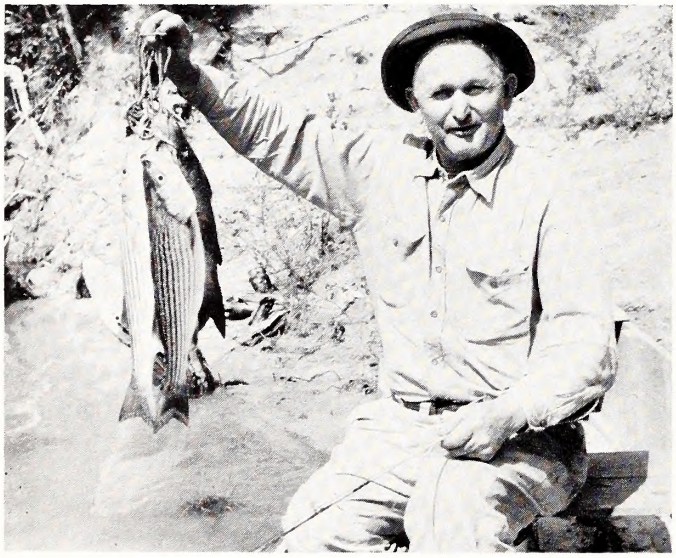
"Thank you for the thorough article on 'Stray Dog Control in North Carolina' in the March 1955 issue. We in Lincoln County finally got the County Commis-

sioners to put in a Dog Warden, with very satisfactory results. Harold Leonhart, our Warden, went to work in May, 1954, and as of May 1, 1955, he had put away 1,108 true strays, and 1,478 other dogs had been vaccinated against rabies.

"His work is not over yet, since there are an estimated twenty thousand dogs in Lincoln County, but we are infinitely better off. People are getting used to having someone to call on when a stray appears, and they seem to be more conscious of rabies danger and of wildlife damage. There are still too many "kind hearted" people who turn out unwanted pups in the country. These pups, unless the warden laborously rounds them up, either starve, get run over, get shot, or go "on the country." Very few of them find homes since most farms already have an oversupply of dogs, anyway. If people could only realize how much more merciful a quick death is, there would be few strays.

PEOPLE AND PLACES

People and Places: a new feature of WILDLIFE, spotlights subjects caught by the roving cameras of our magazine. Who knows, YOU might be next!



A nice morning's catch of striped bass is displayed by J. F. Williams of Elm City. The place was the Tar River near Old Sparta, and the bait was cut herring.

When asked jokingly to eateh a fish for the battery of cameras trained on him, Dr. C. H. Call of Indianapolis obligingly hooked this two-pound bass on a "spring lizard" at Fontana.

"Bravo also on your efforts in behalf of bluebirds. I built five houses this year, and three have tenants. My few hours of work have been more than justified by the pleasure my small girls have taken in the birds, one nest of which is thirty feet from our back door. That one nest of birds has consumed more bugs and worms than I could kill with ten pounds of poison. Next year I shall put up more nest boxes. Hedgerows, water, and birdboxes will pay off a hundredfold in colorful birds and fewer bugs. I can prove this to anybody who cares to come and look.

Yours truly,
Darrel Peeler
Lincolnton, N. C."

Litter Bum

The secretary of the Michigan United Conservation Clubs says the term "litterbug" is much too innocent sounding for the fellow who clutters up our land and water with bottles, cans, papers, etc. He suggests using "Litter Bum." That's O.K. We'll agree to any title, except one. Let's not under any circumstance refer to these people as "pigs." The pigs we used to raise on the farm never cluttered up the landscape with a single bottle, can, paper cup, or piece of facial tissue!

Sailfish Bonanza

The Atlantic continues to dish out piscatorial surprises, presumably because of changing climatic conditions. In the general vicinity of Wilmington, North Carolina, a few sailfish are usually caught in August. Last year the first one was landed in mid-July, and the catch had exceeded a hundred by mid-August. A number of other species have also been taken in record-breaking quantities. Needless to say, folks in the vicinity of Wilmington aren't a bit mad at the change!

How To Weigh A Fish

There are still a few people who believe the old statement about fishermen tending to stretch the truth. To completely wipe out that false impression, here's a suggestion.

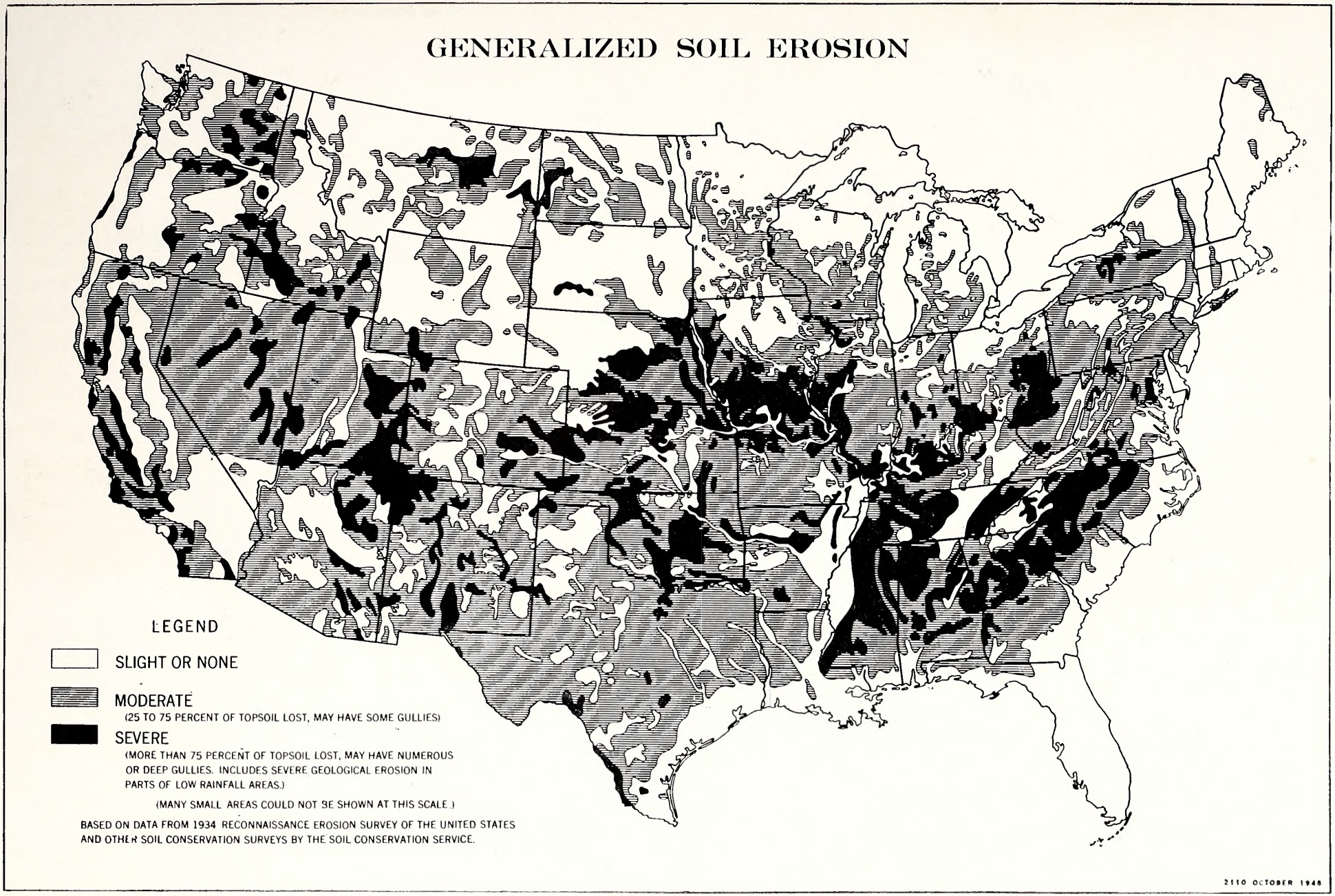
The belief originated because a few anglers accidentally read their scales incorrectly, or used inaccurate scales when weighing their catch.

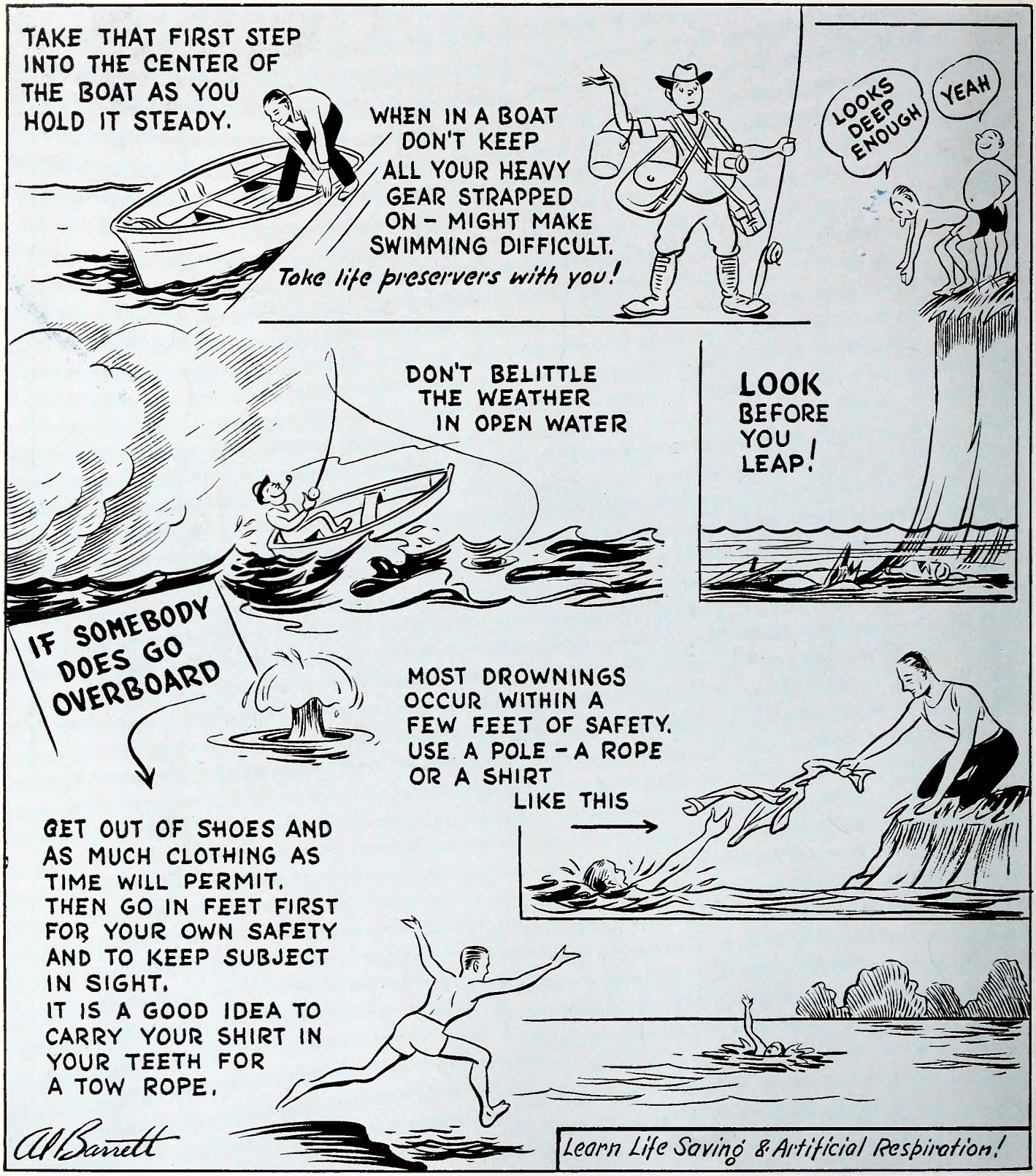
To be sure that the weight is correct, you should use the scientific approach. Use three scales, not just one.

To weigh a fish accurately, hang the second scale on the first and the third on the second. Then hang the fish on the bottom one. If all three scales read alike—say, two pounds—then you know that each is accurate. And, of course, if each of the three scales in the "string" shows two pounds, the fish suspended from the lower one weighs six pounds (2+2+2).

This method is not only extremely accurate and scientific, but it gives a very satisfactory answer . . . *Sport Fishing Institute Bulletin.*

If you think soil erosion is no problem, take a long look at this map!





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Wildlife in north carolina

AUGUST - 1955

NORTH CAROLINA STATE LIBRARY

TEN CENTS

Photo by Jack Dermid

Friend of the Pond Owner

An immature least bittern demonstrates its climbing skill among the cattails of a Wake county farm pond. In water too deep for wading, it can walk the plant stems with amazing skill and speed. In times past, water birds, like bitterns, herons, egrets, and the kingfisher, were ruthlessly shot by pond owners in the belief they were protecting their fish. But research has shown that one of the chief causes of poor fishing in many Tar Heel ponds is an over-population of stunted, under-nourished fish, and by feeding on small fish, these birds are actually contributing to better fishing.

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

LUTHER H. HODGES
Governor

North Carolina Wildlife Resources Commission

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COVER

Hey, what's this? Inside it's the same, but WILDLIFE is sporting a newly-designed cover featuring this month a water-color by Bill Ballard.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors. Full credit is given for all materials published.

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Wildlife Management at N. C. State College

by Rudolph Pate

N. C. State College News Bureau

The nation's varied wildlife and conservation professions are calling for more and more college trained men on whose shoulders the future status of this phase of America's natural resources rests, in large measure.

Citing the growing significance of men skilled in wildlife conservation and management, Dr. Frederick S. Barkalow, Jr., head of the Zoology Faculty at North Carolina State College, said the college could have placed 100 more graduates with master's degrees this spring than it had available.

Furthermore, Dr. Barkalow stated there were 10 openings here in North Carolina, and only one graduate left to fill the need.

The situation, Dr. Barkalow declared, throws the spotlight on the advantages which State College's Wildlife Conservation and Management Curriculum offers to the graduates of the State's high schools. Almost limitless possibilities for employment face the graduates of the college courses.

And State College, Dr. Barkalow asserted, has an outstanding staff and unsurpassed physical facilities, as well as an elaborate extra-curricular schedule, to provide top-level training for young men interested in this field of study.

Gardner Building at State College houses the facilities of the Wildlife Management Curriculum on the first and second floors, providing ample space for classrooms and laboratories.

The classrooms, laboratories, library collections, and other features of the teaching work in Wildlife Conservation and Management at State College are centered in the institution's modern Gardner Hall, named in honor of the late N. C. State Alumnus O. Max Gardner, former North Carolina Governor and United States Ambassador to Great Britain.

Gardner Hall, valued with its equipment at $1,500,000, contains more than one million cubic feet of working space and includes a wide range of facilities, many of them designed especially for the education of students enrolled in the Wildlife Conservation and Management Curriculum. In addition, there are other facilities used jointly by students in other areas of zoology, entomology, plant pathology, and other plant and animal sciences.

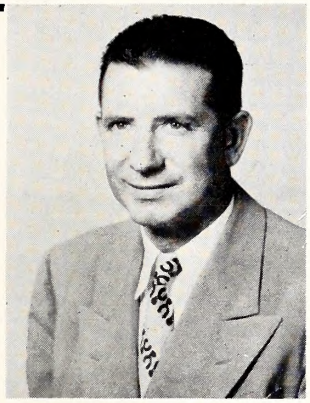
Dr. Barkalow reported that North Carolina State College's faculty and training facilities rank among the best the United States has to offer.

And, he pointed out, North Carolina wildlife resources represent an industry which does an annual business volume of around $100,000,000.

The State's rich resources and the college's superb training facilities place North Carolina's young men who are interested in this area of science in an enviable position.

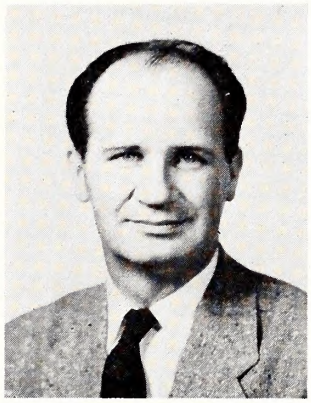
Among the facilities which the college department has at its command are a fisheries laboratory; a wildlife teaching laboratory; a bird and mammal collections room featuring the scientific skins of birds and mammals from throughout the North American Continent and from as far away as New Zealand and the Philippines.

In addition, there are three rooms for graduate students to use as special study and laboratory centers; a physiology laboratory; an animal parasitology room; the Predator and Rodent Control Laboratories of the U. S. Department of the Interior's Fish and Wildlife Service; three air-conditioned laboratories for specialized research; the Library of the Division of Biological Sciences containing complete sets of the most important literature of interest to the wildlife profession; and a conference room.

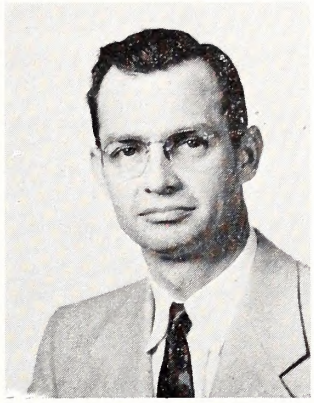


BARKALOW

BRANDT



HASSLER



QUAY

Other facilities include controlled temperature rooms for rearing insects, parasites, and other animals for physiology work; a preparation laboratory and animal rooms; a fish culture laboratory; deep freeze equipment for the preservation of teaching materials; a dermestid room for cleaning the skeletons of birds, mammals, and fish; and a work shop including wood and metal-working machinery for use in building essential research instruments and equipment.

The courses in the Wildlife Conservation and Management Curriculum are designed to give a student a broad background in his specialized field and in the social studies.

Included in the list of courses are: Introduction to Agriculture, General Botany, Composition, United States in Western Civilization, American Governmental System, Algebra and Trignometry, General Zoology, Military, Physical Education and Hygiene, General Inorganic Chemistry, General and Organic Chemistry, Physical Geology, Analytic Geometry and Calculus, General Physics, Comparative Anatomy, Ornithology, Wildlife and Natural Resources Conservation, Military, Physical Education, Botany Elective, Soils, Introduction to Systematic Botany, General and Qualitative Chemistry, English Elective, Introduction to Forest Insects, or Economic Entomology, Principles of Farm Forestry, Sociology of Rural Life, Animal Physiology, Fishery Biology, Plant Ecology, Economics, Basic Speaking skills, Animal Parasitology, Animal Ecology, Wildlife Management, Economics of Agriculture, General Bacteriology, Systematic Botany of Monocot Families, Aquatic Botany, Surveying, Principles of Genetics, and Practical Drafting or Engineering Drawing.

Commenting on the professional opportunities, the satisfying way of life offered to people who become interested in the field, and the high salaries which may be expected, Dr. Barkalow stated:

"It is said, 'Fortunate is the man or woman who finds his avocation in his vocation.' For this reason, wildlife has an inherent appeal to many boys and girls who have lived in a state rich in natural beauty and abundant in wildlife.

"Wildlife management is a newcomer to the field of biological sciences. In fact, it was not until 1935 that forward-looking conservationists made a really concerted effort to establish wildlife training in the colleges of this country. In spite of its recent innovation, there are approximately forty educational institutions giving training toward a wildlife degree as a Bachelor of Science. Many other colleges offer at least one course in this field.

"There are five general areas which offer employment to a college graduate in wildlife. They are Research, Game and Fish Management, Education, Law Enforcement, and Administration.

"The research scientist is charged with the responsibility of pushing aside the curtains of mystery and shining the light of scientific investigation on the complex problems of natural phenomena. The requirements to become a good investigator include a minimum of six years of college training and a considerable amount of scholastic ability. Students who rank near the top of their class usually make the most successful investigators. There are also numerous openings for well-trained men with field experience in connection with research projects.

"The research scientist, however, plays only one position on the wildlife team, for the remaining four groups perform equally essential functions. The game or fish manager who puts into actual practice the findings of research personnel also plays a vital role in conserving and increasing our natural resources. Demand continues for well-trained game and fish managers whose training includes a minimum of four years of college.

"Another player in increasing demand is the education specialist. He is a person who has the abilities to write well, to speak effectively, and to produce radio and television programs, as well as newspaper articles. His objective is to awaken farmers, sportsmen, and entire communities to the needs and practices of conserving our natural resources. In his work, he must have the facilities of dealing pleas-

Photo by Rod Amundson

Student biologists weigh a bluegill fresh from a farm pond as part of their studies in fish management. Much of their time is spent in outdoor laboratory work.

antly and of getting along with people. An education specialist's formal training should include a minimum of four years of college with emphasis not only upon the biological aspects of his profession, but also upon journalism and communicative skills. His job is twofold: carrying the findings of research scientists and game managers to the general public, and, especially teaching principles of conservation to our youthful citizens who will become the leaders of tomorrow.

"In the law enforcement group, the game protector represents another valuable player on the wildlife team. In addition to actually enforcing hunting and fishing laws, his job requires an understanding of the many complex wildlife problems. While few states now require a college degree for these positions, almost every state and federal agency is diligently seeking to fill numerous positions in law enforcement with personnel who have had at least some college training. The principles developed by research scientists have no meaning until they are made effective by proper law enforcement.

"The game administrator is captain and quarterback on this professional team. He usually obtains this position by promotion after a number of years' experience in the wildlife field. Some professional men in this category receive salaries of approximately $12,000.00 a year.

"Employment opportunities in the wildlife profession are found primarily with state and federal agencies, such as state departments of conservation and the United States Fish and Wildlife Service. Beginning salaries for the novice vary from $3200.00 for those with a Bachelor of Science degree to $5000.00 for those with graduate training.

"An additional job opportunity may be found in connection with certain industries and municipalities who are becoming increasingly conscious of problems involving pollution control.

"The basic wildlife curriculum as offered at State College provides training to satisfy requirements for the four-year positions and also for continuing study at the graduate level. With adequate scholastic accomplishment in a basic curriculum of this type, it is possible to do graduate study in several fields of biological science: for example, botany, entomology, genetics, plant pathology, or zoology."

The college faculty is one of the best known groups of teachers and research scientists in the country. The faculty is headed by Dr. Barkalow, Wildlife and Conservation, and includes Doctors B. B. Brandt, Ichthyology and Herpetology; Thomas L. Quay, Ecology and Ornithology; and W. W. Hassler, Fisheries Biology. Dr. Reinard Harkema, whose major field is Parasitology, and Dr. J. L. Evers, whose field is Physiology, are members of

On a field trip a group examines a muskrat house in a Currituck County marsh. North Carolina's vast wildlife resources serve as libraries of information for these students.

Photo by F. S. Barkalow

What's inside a fox's stomach? This student is identifying the bones, hair, and seeds from the digestive system of a fox to determine its food habits.

Photo by Jack Dermid

the Zoology faculty teaching courses in these subjects.

Directing the work of the department, Dr. Barkalow is nationally known for his teaching, research, and administrative achievements. A native of Marietta, Georgia, he holds a B. S. degree from Georgia Tech and M. S. and Ph. D. degrees from the University of Michigan. He also has studied at the Alabama Polytechnic Institute. Prior to coming to North Carolina State, he was a staff member at Georgia Tech, Alabama Polytechnic Institute, and the University of Michigan.

During World War II, he advanced from the rank of lieutenant to lieutenant colonel in the U. S. Army.

He came to North Carolina in June of 1947 and divided his time between the North Carolina Wildlife Resources Commission, of which he was a principal biologist, and State College, where he taught and conducted wildlife research. He is still a consultant to the Wildlife Resources Commission and has been promoted Professor of Zoology and head of the Zoology Faculty at the College.

Dr. Barkalow has written more than 33 scientific publications in his profession. His main fields of interest are mammalogy and wildlife conservation and management. Among his other interests are fish culture in farm ponds, water conservation, and pollution problems.

His professional and honorary affiliations include membership in Phi Beta Kappa, Phi Kappa Phi, Sigma Xi, Phi Sigma, the American Society of Mammalogists, American Ornithologists Union, Arctic Institute of America, the Wildlife Society, North Carolina Academy of Science, the American Association for the Advancement of Science, the American Association of University Professors, the National Parks Association, the American Society of Ichthyologists and Herpetologists, the Society of Systematic Zoology, the Carolina Bird Club, the Archeological Society of North Carolina, and the American Institute of Biological Sciences.

He has held a number of important positions in these organizations and is listed in *American Men of Science, Who's Who in The South and Southeast,* and *Who Knows and What.*

He is an Episcopalian, a member of the Lions Club, and takes an active part in the civic life of Raleigh and Wake County. He is on the board of directors of the United Fund of Raleigh and was chairman of the college division of the United Fund Drive last year. He is married to the former Joan Metzgar, and they have a daughter, Joanna Barkalow, 11.

For further information regarding educational opportunities in wildlife management, write F. S. Barkalow, Jr., Box 2515, State College Station, Raleigh.

Last year, campers thrilled at the opportunity to see and photograph a confiscated fawn. But they learned that fawns belong in the woods and should not be stolen for pets. Many youngsters carry cameras to record their many activities.

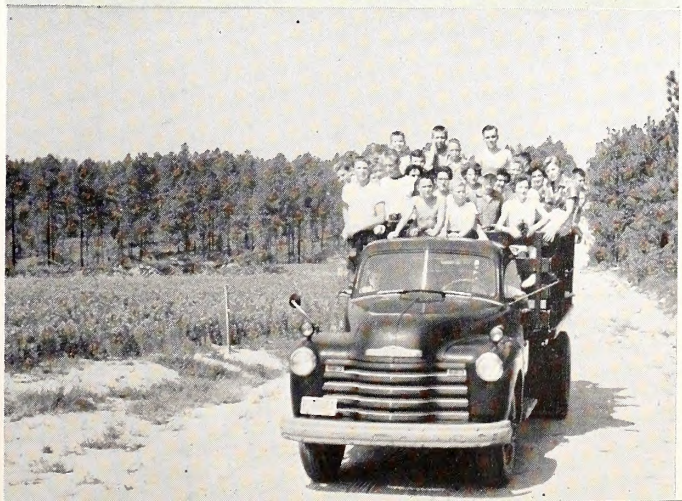
A WEEK OF WILDLIFE

The fourth week of August will be a highlight in the lives of about 100 lucky boys and girls from all parts of the State. The annual 4-H Wildlife Conference at Camp Millstone Rock in the Sandhills Wildlife Management Area will be in session.

The youngsters come to camp for a week of outdoor fun and living, but there is a serious side to their camp-life. A series of classes about wildlife and the wise use of our natural resources will be conducted by personnel of the Wildlife Resources Commission. The topics will include forestry, fish and game management, law enforcement, nature study, furs and trapping, wildlife photography, and the sports of fishing and hunting. The remarkable thing is that the boys and girls like to study about the out-of-doors.

Since these youngsters will be the sportsmen, parents, and teachers of tomorrow, the Conference is a sound investment for the future. It is sponsored by the State 4-H Organization and the Federal Cartridge Company with the Wildlife Resources Commission cooperating.

A guided tour of the Sandhills Wildlife Management Area is a highlight of the week where campers go to see the principles of conservation in action. They will be shown beaver colonies, a fish hatchery, wildlife habitat plantings, forestry operations, and many forms of wildlife.



The Birds Like LENOIR!

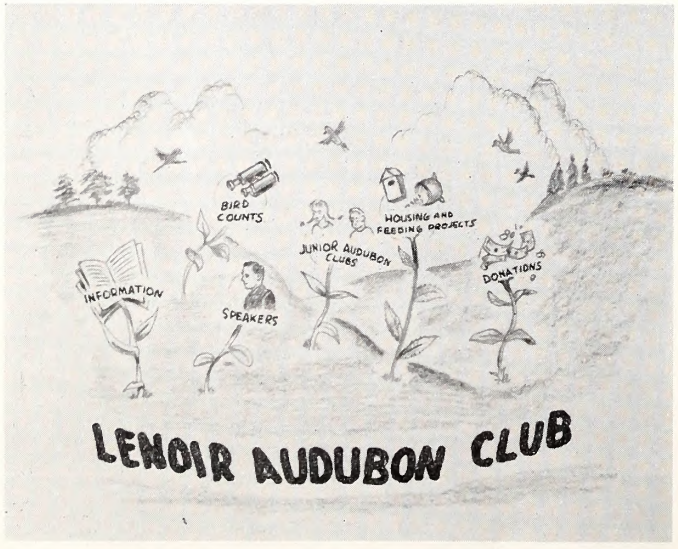
by Lunette Barber

The birds like Lenoir! It is not because Lenoir, North Carolina, is located in one of the most ideal spots to be found, bathed with vapor from the beautiful Blue Ridge Mountains, caressed and refreshed by shadows and breezes from the great Pisgah National Forest, has an elevation of 1182 feet and endowed with fertile vales near by such as Happy Valley. The birds like Lenoir because Lenoir likes the birds to the extent that there is an excellent program and reception for them at all times. The program began in 1942 as the result of the organization of the Lenoir Audubon Club which was an idea from the outgrowth of interest realized by a few members of the Carolina Bird Club who attended a meeting in Statesville in the spring of 1941. The club has never been extremely large, perhaps an average membership of 20 with two requirements: *interest and activity*. The purpose of the club has been to increase general interest in birdlife in the community and to encourage feeding and protecting the birds. And what a wonderful purpose—teach people, favor birds.

There have been so many ways to accomplish the first purpose that space does not permit all to be listed. Each member is a source for information when requested in the city and county schools, Scouts, men's Civic Clubs and Garden Clubs. Each member also is an examiner for the Bird Study requirements for Boy and Girl Scouts. Mrs. Rose Powell, a club member and teacher in one of the city schools, has organized and efficiently directed Junior Audubon Clubs for several years in her school. The clubs have really worked. As a result, a good Nature Museum has been established in the school for the school. Not only are the members interested in the museum and contribute to it, but the entire school benefits.

An outstanding contribution to the community has been done through the sponsorship of able speakers. Some were Dr. Alexander Sprunt, Bert Harwell, Howard Cleaves, Archibald Rutledge and Charles Broley, the Eagle Man.

Illustration by Duane Raver



Not only are the club members interested in songbirds, they are cognizant of the value of hawks and their contribution to the Balance in Nature. The annual hawk migration is the highlight of the year. Since Lenoir is not too far from the hawk migration route, the club sees, studies, and learns of the migrants which is one of the most sensational shows in bird-watching. A report from observations along the Blue Ridge Parkway is made each fall. Besides the hawk counts, two bird censuses are taken annually—Christmas and May.

Since interest is never exhausted and a desire for learning is always at a maximum height, the club members attend meetings of other conservation groups, some have even been enrolled in Audubon Camps in Maine and California. In order to learn together and enjoy fellowship, the members go on hikes, picnics, and bird walks. Fellowship alone has remunerated each member for all efforts and work done since the club was organized.

Individuals have erected bird houses, baths, and feeding stations in all sections of town. Last winter the club members bought a total of 700 pounds of sunflower seed especially for purple finches, pine siskins, and evening grosbeaks. Besides buying food for birds, many seeds are planted and shrubs grown to provide additional food and cover.

Last, but not most important to the club, is money. When the club needs money, contributions are made. No soliciting, selling, etc., is done. The Lenoir Audubon Club was the first bird club in the

WILDLIFE CLUB AT WORK

by Grover C. Dobbins

County Agent, Taylorsville, North Carolina

Here's what happens when an active wildlife club is offered an opportunity---community cooperation pays off for Alexander's youngsters!

Photo by Jim Lee

Under the watchful eye of Protection Supervisor Walter Edmisten a boat full of youngsters return to shore after a ride around Alexander County's Wildlife Lake while on a 4-H Club picnic.

In the spring of 1952 Mr. Fred Milstead of Route 2, Taylorsville, North Carolina, offered the Alexander County Wildlife Club 66 acres of land if the club would develop it and build a lake and stock it with fish. The Wildlife Club jumped at this opportunity and today there is a five-acre lake stocked with bass and crappies. The club now has a deed to the property.

Money for the construction of the dam was obtained through membership fees in the Wildlife Club and contributions from business and individuals. At the request of Mr. Milstead a Board of Trustees was set up for the property. Those on the board are Mr. Ray Jennings, Mayor of Taylorsville; Mr. Frank Reese, County Wildlife Protector; and Mr. Grover C. Dobbins, County Agent.

At the present time, there are more than 100 members in the Wildlife Club. Rev. L. V. McPherson is serving as President. Fishing in the lake is allowed by membership in the Wildlife Club. In addition to members of the club all 4-H Club members, Boy Scouts, and children under 16 are allowed to fish.

It is in the plans, as soon as money is available, to build a club house on the site with outdoor furnaces throughout the area. These out-door furnaces are to be built by various clubs and individuals. Some of the Home Demonstration Clubs already have their brick on the grounds for building furnaces.

For the past two years, the 4-H adult leaders have sponsored an all day Field Day at the Wildlife Lake for all 4-H Club members in the county. The morning part of the program has been devoted to speaking and demonstrations, some of which were put on by 4-H Club members. Miss Lunette Barber from the North Carolina Wildlife Resources Commission has been with us for both of these programs and has done a splendid job talking to the 4-H members and adult leaders.

After a picnic lunch the afternoon programs consisted of various games, fishing, swimming, and boating. The 4-H adult leaders plan to make this an annual event.

All of this was made possible because a public spirited man saw fit to donate the land to the Wildlife Club, and to Mr. Milstead we would like to say thanks for making this possible for so many people to enjoy.

---

state to make a contribution to the Endowment Fund of the Carolina Bird Club. It was generous—$100—cash from the members.

When entering Lenoir on a state highway, one may see a sign: LENOIR—BIRD SANCTUARY—1943, which was erected by the State Highway Commission. The signs have a *real* meaning. An effort by the club has been made to promote the idea that the birds are valuable from an economic standpoint as well as aesthetic. The desires of the members would be to say to each citizen, "Let's protect and enjoy, instead of thou shalt not kill." It is much more dignified to educate than to prosecute.

Is it not easy to see why the birds like Lenoir? Just make a visit there and the birds themselves will tell you in song.

After interviewing the club's first president, Mrs. C. S. Warren, she had this to say, "Looking back over the organization's history is like contemplating a life well spent. How well it has accomplished its purpose meets one at every turn. IT IS DOING WHAT EACH CLUB SHOULD DO."

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Commission To Hold Wildlife Protection Training School.

On September 4 about 20 prospective wildlife protectors will register for three weeks of intensive training at the Institute of Government Training Barracks, U. N. C. Chapel Hill. Deadline for applications to attend the training course was July 15. On August 1 applicants will take a competitive examination and be interviewed by Commission personnel to select candidates for the training period. Some of the graduates will be employed immediately on graduation, and the remainder will be held on a standby basis to fill vacancies in the Commission's law enforcement staff as they occur. Courses at the training school include conservation law, court procedure, rules of evidence, wildlife conservation, public relations, first aid, and marksmanship.

* * * *

Wildlife Protectors To Cooperate In Forest Fire Control.

Field personnel of the State Forest Service will be invited to attend a series of nine meetings of the Wildlife Commission's Protection Division during the next few weeks to work out ways and means of cooperating in forest fire prevention on the local level.

Walter Anderson, Chief of the Commission's Protection Division has invited Forest Service people to attend meetings held in each of the nine commission districts. Ways and means will be worked out for cooperation in detection, reporting and suppression of forest fires, and apprehension of violators of the State's forest fire laws. Anderson, newly appointed as Wildlife Protection Division Chief is conducting the nine meetings to become acquainted with his men and work out matters of policy and operational procedure.

* * * *

Time To Get New Combination Hunting-Fishing Licenses.

If you have been fishing on a combination hunting and fishing license you need a new one as of August 1, 1955. Combination licenses and hunting licenses are now on sale at license dealers. Available without charge are copies of the 1955-1956 hunting and trapping regulations.

FISH REMOVAL FROM CLEARWATER LAKE

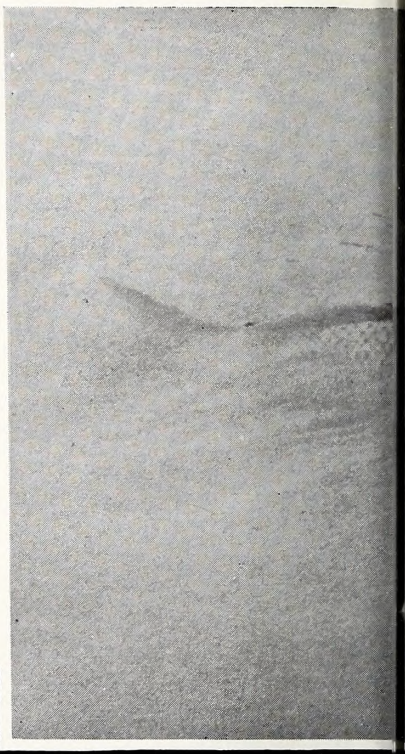
Photo Feature By Jim Lee

What happens when the population in a body of water becomes unbalanced? Anglers of Davidson and surrounding counties found out when Clearwater Lake became infested with carp, catfish, and undersized panfish. Fishing declined to the point where it was hardly worth the trouble to wet a line in the sixty-acre arm of High Rock Reservoir. Some hardy bass remained, and some panfish grew to respectable size, but on the whole the fishing was just plain no good. No good, that is, unless you like carp. The lake had plenty of these—up to ten pounds in weight. Yet Clearwater Lake is capable of producing good fish, and plenty of them.

Ordinarily, the answer would be simple. Drain the lake, remove the undesirable population, and restock after refilling the lake. Or in a shallow pond, net the fish and remove the unwanted rough fish and reduce the number of small panfish. Clearwater Lake, however, is connected with High Rock Reservoir by a culvert under the railroad fill that separates the two bodies of water, and the depth of the lake makes seining impractical. Faced with the problem of removing the fish population without netting or draining the lake, Wildlife Commission fish biologists decided to utilize a new tool in fish management, a chemical that drugs the fish.

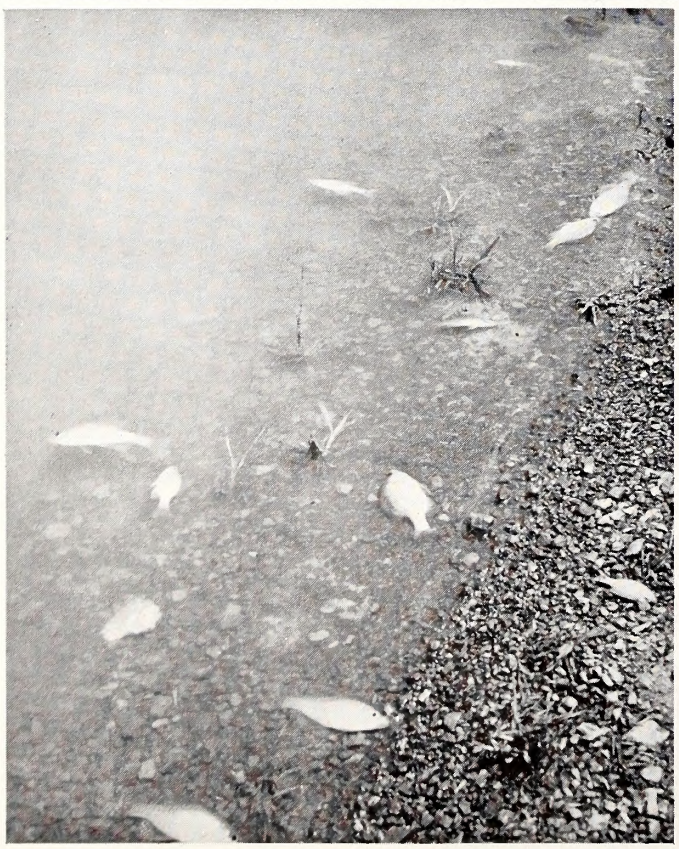
FISH REMOVAL
From Clearwater Lake

Biologists began putting the chemical in the lake early in the morning, and by mid-morning a large crowd had gathered to watch the drugged fish come in. Fish began to come to the top within minutes after the drug reached them.

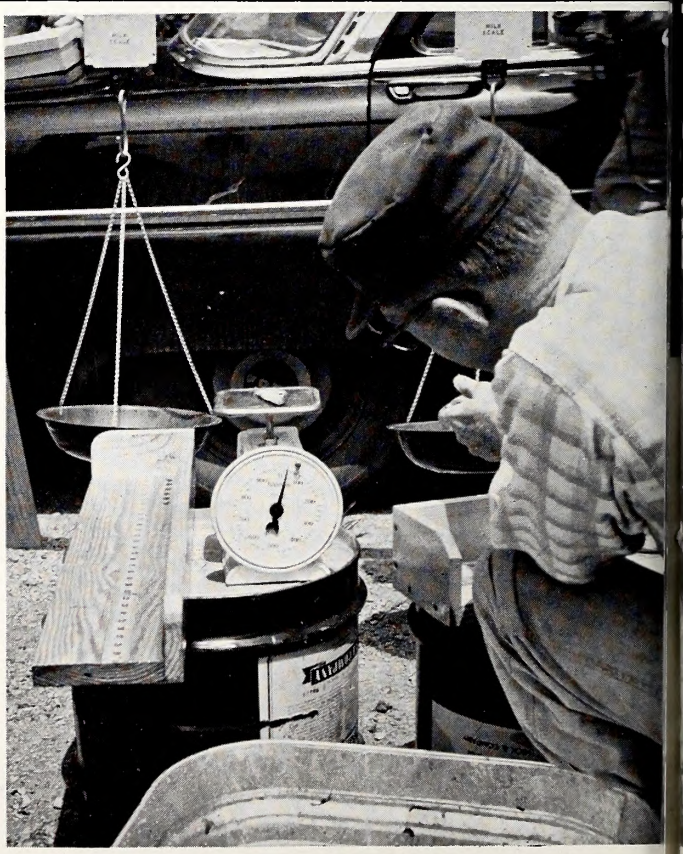


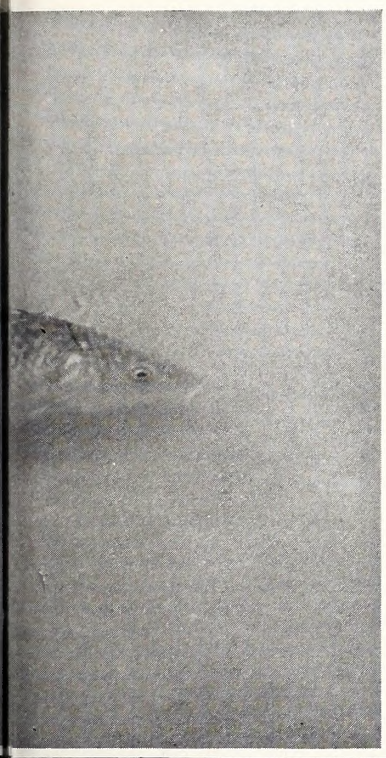
A large carp comes to the surface, capillaries in the filaments of the gill a large percentage of the weight of

Small panfish, washed to the shore by waves from the outboards used by the biologists, line the edge of the water. Competition for food was so intense in the crowded lake that small fish had no chance to grow.



A biologist weighs a small bluegill removed from the lake. In formation was carefully recorded on the fish removed, including length, weight, sex and age. Scale samples were used to deter mine the age of the fish.



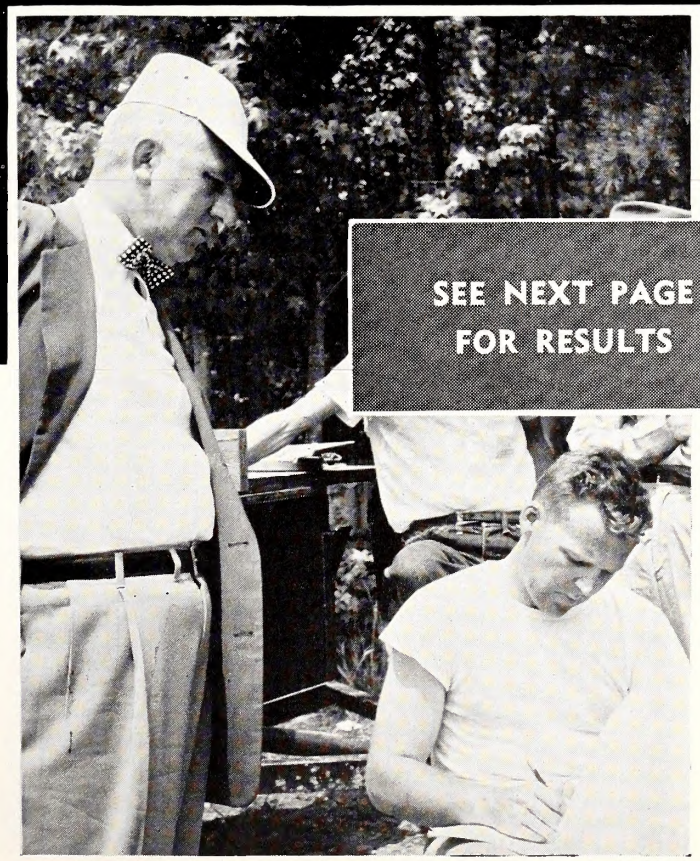


oxygen. The chemical constricts the
h are smothered. Carp accounted for
.

Spectators lined the shore and gathered along the edge of the railroad fill to watch the pick-up operation. The biologists scooped up the fish with hand nets as they came to the top.

mall panfish were sorted by species. Most of the fish taken
vere bream and crappie, although they did not account for a
igh percentage of the total weight since most were stunted
unts.

Wildlife Commissioner Thurman Briggs of Lexington looks on as a biologist tabulates the information obtained. This method of fish removal is a standard management tool in many states, and has proven effective in Clearwater Lake.



SEE NEXT PAGE
FOR RESULTS

RESULTS OF FISH REMOVAL FROM CLEARWATER LAKE

OPERATION CLEARWATER

by L. B. Tebo
Fisheries Investigator

For some time it has been known that fishing in 60 acre Clearwater Lake, a popular and heavily fished appendage of High Rock Lake, was not what it should be. Preliminary investigation by biologists of the Wildlife Resources Commission indicated that Clearwater Lake was overrun with carp and other rough fish plus a large population of stunted crappie and white perch . . . a condition not conducive to good sport fishing.

White perch, crappie and the sunfishes are particularly susceptible to overpopulation and stunting, and in many such cases it is possible to restore the population balance by large scale thinning—using seines and nets or by removing fishing restrictions so that anglers may thin the population. Clearwater Lake could not be seined and the presence of carp complicated the problem since they can not be effectively thinned by sport fishing.

The presence of rough fish and overpopulation by pan fishes are common problems in many parts of the state and the question naturally arises: What can be done to remedy the situation? Fishery managers have found that ,in many such cases, the quickest and most practical solution is to remove the entire fish population in the lake and start over again with a known population. For that reason the use of fish killing drugs has become one of the most useful tools of modern fisheries managment.

On May 17, 1955, your Wildlife Resources Commission carried out one of the largest fish removal operations ever attempted in North Carolina. On that date the fish in Clearwater Lake were eradicated using rotenone, a drug derived from the root of a South American plant. The primary action of this drug is to suffocate the fish by constricting the capillaries in the gill filaments. Rotenone is harmless to humans and other air breathing animals.

Application of the drug was begun at 9:30 and by 10:00 a.m. large numbers of small fish began to appear at the surface of the water. Fish continued to surface until late afternoon and an estimated 200 interested sportsmen were on hand to assist Commission personnel in picking up the fish and to observe the results of applying the drug.

All fish thus collected were taken to a checking station set up on the shore of the lake where biologists of the Commission weighed, measured and collected scales for determination of age and rate of growth. After processing, all edible-size game fish were placed on ice and donated to a local charitable institution.

The information obtained at Clearwater Lake will be of value to fisheries biologists for diagnosing the cause of the poor fishing and for comparison with the fish populations of other bodies of water. Also, it is often necessary for fisheries biologists to determine conditions in a lake with meager data. The information obtained from the total fish population of Clearwater Lake will aid in interpreting conditions in other lakes when it is only possible to obtain a minimum of data.

●——————See CLEARWATER Page 16

SEWAGE and FISHING

Reprinted from Sports Fishing Institute Bulletin

Clean waters are essential for good fish habitats. Is your community doing its part in protecting our vital water resources?

Fifty years ago, we had little pollution. Most streams were clean. They were teeming with fish. A little sewage found its way into the waters, but our streams and lakes could take care of it.

Now, pollution by municipal sewage is a big and growing problem. Many streams will no longer support desirable kinds of fish because of pollution. The fish which are caught in these waters often aren't fit to eat.

In some polluted waters fishing has been discouraged because of the danger of disease. Of course, swimming in these waters isn't allowed, either. They are really open sewers, and smelly ones at that.

NO TREATMENT - NO FISHING

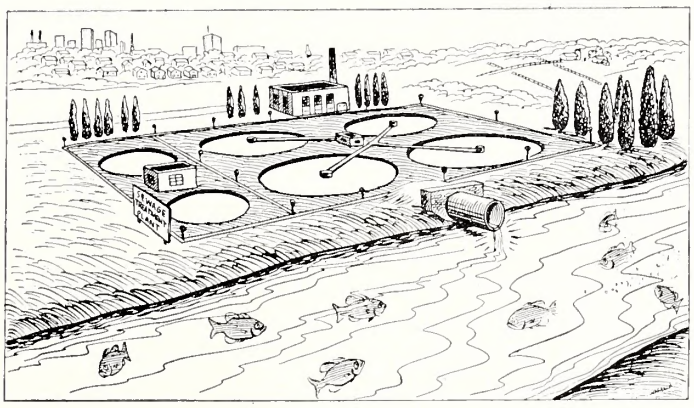
At the turn of the century we had no serious pollution problem. Most people lived on the farm or in small towns. There were few sewer systems. Since then, there has been a big change. Many small towns have grown to be big cities. We have more people now, and more sewer systems. Of the 160 million Americans, over two-thirds now live in urban communities. Modern sewage systems have been developed to collect the wastes of entire cities and discharge them at concentrated points in our rivers.

There is an added problem. In many places our garbage, once hauled away by the garbage collector, now passes into the sewer, too, because of modern methods of disposing of it through the kitchen sink. We not only have more and more families using our sewer system, but the average family now contributes more sewage than it did even a dozen years ago.

A number of communities have sewage treatment plants. But, many still discharge it into our rivers. Nearly 12,000 communities, with a population of nearly 100 million people, have sewer systems. Of these, more than 8,000, with a population of about 60 million people, discharge untreated or inadequately treated sewage into our streams and lakes.

When the sewage enters the waters, bacteria begin the process of breaking down the wastes. This

GOOD TREATMENT - GOOD FISHING



work by bacteria uses up dissolved oxygen in the water.

Like ourselves, fish must have oxygen. Their gills act in much the say way that our lungs do. They take oxygen into the body. If there isn't enough oxygen, the fish suffocate.

Some fish can live with less oxygen than others. The kinds of fish we prefer to catch need considerable oxygen. The carp needs less. He can live in some polluted waters where game and pan fish couldn't survive.

Of course, most of the food organisms of the fish need oxygen, too. Crayfish, minnows, and most in-

sects can't live if the decay by bacteria takes most of the oxygen out of the water.

When the polluted water moves down stream, it gradually becomes purified as the bacteria take care of the polluting waters. Too, streams can absorb some oxygen from the air, and some is released by the aquatic plants. In a swift-flowing turbulent stream, oxygen replenishment takes place quickly. In slow-moving sluggish water, more time is needed. Here the stream often becomes greasy looking and foul-smelling.

Most waters can take care of a little pollution. But the sewage loads are so big now that in many streams the bacteria can't handle the big load. The streams become smelly, and devoid of desirable fish. You wouldn't want to fish in them even if the fish could live there.

So, most of our towns and cities must now provide sewage treatment which will remove at least enough of the polluting materials that the stream itself can handle the remainder. There are two degrees of treatment: primary and secondary.

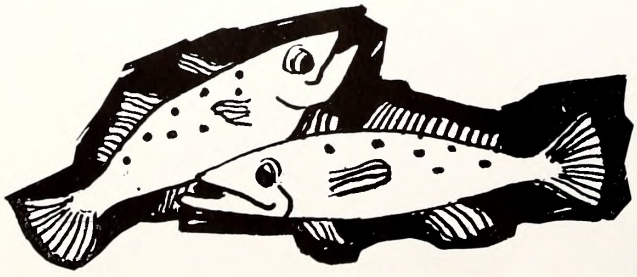
In primary treatment, the water usually passes through a screen to catch sticks and other big objects. Then it flows slowly through a "grit chamber," where sand, gravel, and other heavy objects settle. The water then flows into a settling tank where it stands for an hour or more. While the water stands, some solids drop to the bottom as "sludge," others rise to the top as "scum." Then the water between the two layers is drained off. This treatment takes care of about 35 percent of the pollution.

In secondary treatment, the waste water is carried from the settling tanks into "filters" and "activated sludge beds" where bacteria work on the dissolved materials in the water. We can have almost complete removal of polluting substances through these secondary treatment processes.

Does your community have proper sewage treatment? Such treatment does cost money. But, that money is well spent. It's an important contribution to the health of the community and the people living down stream.

You wouldn't dump your garbage in your neighbor's yard. Yet, that's what you are doing to the folks living down stream when your town dumps untreated sewage into the river.

Pollution destroys your fishing. It destroys many other fine things, too. Be sure that your community takes proper care of its sewage.



PROTECTOR OF THE MONTH

Carlton R. Parker

Carlton R. "Buck" Parker of Pollocksville is one of our wildlife protectors with more than twenty years of service, having been appointed Jones County protector on December 17, 1934. A life-long resident of Jones County, he was born in Pollocksville on November 8, 1905. After graduation from Pollocksville High School he attended a school of telegraphy and was then employed by Western Union until he accepted his appointment as protector. He has since completed the Wildlife Protectors course conducted by the Institute of Government of the University of North Carolina. A leading citizen in his community, Mr. Parker last year was chairman

CLEARWATER

from page 14

Clearwater Lake lived up to expectations. Including fish observed and picked up for several days after the application of the drug, the lake contained approximately 90 pounds of fish per acre. Ninety-three per cent or approximately 83.7 pounds per acre were rough fish and small pan fish of no value to anglers. Only seven per cent, or 6.3 pounds per surface acre, were game fish or a desirable size for angling.

On June 17 Clearwater Lake was restocked with 6000 fingerling bass and 2000 yearling bream. Within a few years it is expected that Clearwater Lake will provide excellent fishing for the sportsmen of the state.

of the March of Dimes campaign in Jones County, and this year is serving as secretary of the Pollocksville Rotary Club. He is a member of the Presbyterian Church. He has gained many commendations for his outstanding work with scouts, 4-H Club members, and the students of the schools of his county, with whom he has spent a great deal of time in the interest of wildlife conservation.

Mr. Parker is justly proud of his family. Two of his daughters were graduated from Flora Macdonald College, while the third plans to enter next year. His son is now serving in the Army.

It's The Law!

Question: Is a fishing license necessary when fishing in a private pond?

Answer: Fishing licenses are required only when fishing in public waters. Private ponds are defined as being water arising within and lying wholly upon the lands of a single owner or a single group of owners or tenants in common and from which fish cannot escape and into which fish of legal size cannot enter from public waters at any time. All ponds or lakes not classified as private shall be considered public fishing waters. Any stream, river, or lake within which fish of legal size are free to move across property lines shall be considered public waters, and subject to the regulations governing fresh-water fishing.

Enforcement Record For May

The following is a tabulation of the enforcement activities of the Wildlife Protection Division for the month of May, 1955:

Persons checked	50.091
Total prosecutions	824
Total convictions	804
Total fines collected	$3,349.90
Total costs collected	$5,984.83

Fines were suspended or not levied in 54.3% of the convictions. All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the Wildlife Commission or its personnel.

EASTERN CAROLINA FERRY SCHEDULES

Fishermen planning a trip to the Outer Banks will find the below ferry schedule of interest. Summer schedules are effective from June 1 to September 30, and Winter schedules are effective from October 1 through May 31.

ALLIGATOR RIVER FERRY

This ferry is on U.S. 64, between Sandy Point in Tyrrell County and East Lake in Dare County. Crossing time is approximately 30 minutes, and the capacity is 18 to 22 cars.

Summer Schedule		Winter Schedule	
Leave Sandy Point	Leave East Lake	Leave Sandy Point	Leave East Lake
7:15 a.m.	6:30 a.m.	6:45 a.m.	6:00 a.m.
8:45 a.m.	8:00 a.m.	8:15 a.m.	7:30 a.m.
10:15 a.m.	9:30 a.m.	9:45 a.m.	9:00 a.m.
12:00 noon	11:00 a.m.	11:15 a.m.	10:30 a.m.
1:45 p.m.	12:45 p.m.	12:45 p.m.	12:00 noon
3:15 p.m.	2:30 p.m.	2:15 p.m.	1:30 p.m.
4:45 p.m.	4:00 p.m.	3:45 p.m.	3:00 p.m.
6:10 p.m.	5:30 p.m.	5:15 p.m.	4:30 p.m.
7:30 p.m.	7:00 p.m.	6:15 p.m.	5:45 p.m.

CROATAN SOUND FERRY

This ferry is on U.S. 64 and 264 between Manns Harbor and Mantco in Dare County. Crossing time is approximately 30 minutes and the ferry capacity is 18 to 22 cars.

Summer Schedule		Winter Schedule	
Leave Manns Harbor	Leave Roanoke Island	Leave Manns Harbor	Leave Roanoke Island
7:00 a.m.	7:00 a.m.	6:45 a.m.	6:00 a.m.
7:45 a.m.	7:45 a.m.	8:15 a.m.	7:30 a.m.
8:30 a.m.	8:30 a.m.	9:45 a.m.	9:00 a.m.
9:15 a.m.	9:15 a.m.	11:15 a.m.	10:30 a.m.
10:00 a.m.	10:00 a.m.	12:45 p.m.	12:00 noon
10:45 a.m.	10:45 a.m.	2:15 p.m.	1:30 p.m.
11:30 a.m.	11:30 a.m.	3:45 p.m.	3:00 p.m.
12:15 p.m.	12:15 a.m.	5:15 p.m.	4:30 p.m.
1:30 p.m.	1:30 p.m.	6:30 p.m.	6:00 p.m.
2.15 p.m.	2:15 p.m.	7:30 p.m.	7:00 p.m.
3:00 p.m.	3:00 p.m.	11:00 p.m.	10.30 p.m.
3:45 p.m.	3:45 p.m.		
4:30 p.m.	4:30 p.m.		
5:15 p.m.	5:15 p.m.		
6:00 p.m.	6:00 p.m.		
6:45 p.m.	6:45 p.m.		
7:30 p.m.	7:30 p.m.		
8:30 p.m.	8:30 p.m.		
10.30 p.m.	9:30 p.m.		
12:00 midnight (nightly except Monday)	11:30 p.m. (nightly except Monday)		

OREGON INLET FERRY

Providing access to Cape Hatteras, the Oregon Inlet Ferry requires a crossing time of approximately 20 minutes. The capacity is 18 to 22 cars.

Summer Schedule		Winter Schedule	
Leave North Shore	Leave South Shore	Leave North Shore	Leave South Shore
5:00 a.m.*	5:40 a.m.*	6:00 a.m.†	6:30 a.m.†
5:40 a.m.	6:20 a.m.	7:00 a.m.	7:30 a.m.
6:20 a.m.	7:00 a.m.	8:00 a.m.	8:30 a.m.
7:00 a.m.	7:40 a.m.	9:00 a.m.	9:30 a.m.
7:40 a.m.	8:30 a.m.	10:00 a.m.	10:30 a.m.
8:30 a.m.	9:10 a.m.	11:00 a.m.	11:30 a.m.
9:10 a.m.	9:50 a.m.	12:00 noon	12:30 p.m.
9:50 a.m.	10:30 a.m.	1:00 p.m.	1:30 p.m.
10:30 a.m.	11:10 a.m.	2:00 p.m.	2:30 p.m.
11:10 a.m.	11:50 a.m.	3:00 p.m.	3:30 p.m.
11:50 a.m.	1:00 p.m.	4:00 p.m.	4:30 p.m.
1:00 p.m.	1:40 p.m.	5:00 p.m.†	5:30 p.m.†
1:40 p.m.	2:20 p.m.		
2:20 p.m.	3:00 p.m.		
3:00 p.m.	3:40 p.m.		
3:40 p.m.	4:20 p.m.		
4:20 p.m.	5:00 p.m.		
5:00 p.m.	5:40 p.m.		
5:40 p.m.	6:20 p.m.		
6:20 p.m.*	7:00 p.m.*		

*Note: The 5:00 a.m. and 6:20 p.m. trips are discontinued August 15.
†Note: The first and last round trips are discontinued November 1 and resumed February 1. Additional service in April and May includes trips leaving the North Shore at 5:00 a.m. and 6:00 p.m. and leaving the South Shore at 5:30 a.m. and 6:30 p.m.

PRIVATE FERRIES TO THE OUTER BANKS

The Atlantic-Ocracoke Ferry carries passengers only, for a fare of $1.50 each way. Crossing time is three and a half hours, and the capacity is 60 passengers. The ferry leaves Atlantic at 1:00 p.m. and leaves Ocracoke at 7:00 a.m. daily throughout the year.

The Hatteras Inlet Ferry between Hatteras and Ocracoke Island has a capacity of 8 cars. Fare is $5.00 per car and includes passengers. The crossing time is 45 minutes. Special trips may be arranged through the operator, Captain Frazier Peele at Hatteras. The Ocracoke Island dock is at the Coast Guard station, 12 miles by sand trail from Ocracoke Village. Transportation to the village may be arranged on a mail truck. The ferry operates on an year-round schedule.

Leave Hatteras	Leave Ocracoke Island
7:30 a.m.	8:15 a.m.
12:30 p.m.	1:15 p.m.
5:15 p.m.	6:00 p.m.

The Denison Herald

DENISON, TEXAS, MONDAY, SEPTEMBER 27, 1954

Tame Deer Goes Berserk, 3 Hurt

A tame buck deer went suddenly berserk Sunday afternoon and seriously gored three persons on the Joe Dophied ranch, five miles northwest of here.

Seconds after Helen Parker, 17-year-old senior in Oak Cliff High School in Dallas, had taken a photograph of the deer, it turned on her and her mother, Mrs. Evelyn Parker, 1111 Texuna Drive.

Most seriously injured are Mrs. Parker, who suffered a broken right arm and painful lacerations of both legs from the deer's antlers, and her daughter, Helen, who received lacerations about the legs and arms and who was in xray this morning and her father, A. A. Parker, who received a severe gash on the left leg.

Mrs. Parker, Helen and another daughter, Janice, 8, together with Mrs. Anna Belle Stanford had driven about a mile from the Parker home to the Dophied ranch to get a picture of the deer before Helen returned to Dallas.

They had climbed through the fence and were petting the deer "as we have dozens of times before," Mrs. Parker said.

"This time, however, as soon as Helen had taken one picture the deer turned on me," Mrs. Parker said. "I was tossed in the air and when I landed I think that is when my arm was broken."

Mrs. Parker said she screamed at Mrs. Stanford to get her little girl to safety and when the deer turned on Helen, she went to her aid.

Mrs. Stanford escaped with Janice and raced to the Parker home for help. Meanwhile, the two women battled the deer.

After Mrs. Parker got the deer off Helen, it overcame her and had her on the ground goring her with its horns.

"I kept screaming for Helen to go for help before it killed me," Mrs. Parker recalled. "But Helen wouldn't leave me alone."

Mrs. Parker said it was fortunate that Helen was able to slip between its antlers and after Helen got the deer off Mrs. Parker she got a bulldogging hold and held on.

By this time, help arrived with Parker and a neighbor, Vittie Cothron, scrambling over the fence and going to the rescue of Helen. However, in getting Helen freed from the deer, Parker suffered a painful gash on his leg.

Parker was released from the hospital this morning, but his wife and daughter are still patients.

Mrs. Parker was still stunned by the deer's action. "I had petted him dozens of times," she kept repeating.

GORED BY DEER—Mrs. Evelyn Parker is pictured in Madonna Hospital this morning where she was taken after being gored by a pet deer Sunday. Her step-daughter, Helen, is also a patient but was in X-ray when this photo was taken. (Staff photo)

DEER IN TAMER MOMENT—This is photo of the deer that gored three Denisonians Sunday taken by a Herald photographer last Christmas. That's Santa Claus all right, who even then remained a fence away.

Photo Courtesy Texas Game and Fish

Despite repeated warnings, people continue to pick up young fawns in the woods. This story, from a Texas newspaper, illustrates what can happen with so-called "tame" deer.

This story could have come from a North Carolina newspaper, since many people are unaware of the danger involved in attempting to raise fawns that they have found in the woods. According to law, fawns must be turned over to a wildlife protector who will take the deer to a game refuge for rearing.

It Happened in Texas

Reprinted from *Texas Game and Fish*

A *tame* buck deer went suddenly beserk Sunday afternoon and seriously gored three persons on the Joe Dophied ranch, five miles northwest of Denison.

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Editor's Note—This deer was legally kept, since Dophied held a game breeder's license. However, it is illegal to pick up or pen any species of Texas game, and, more important, fawns when grown often turn from pets into dangerous animals without warning. Similar stories are reported in Texas several times every year.

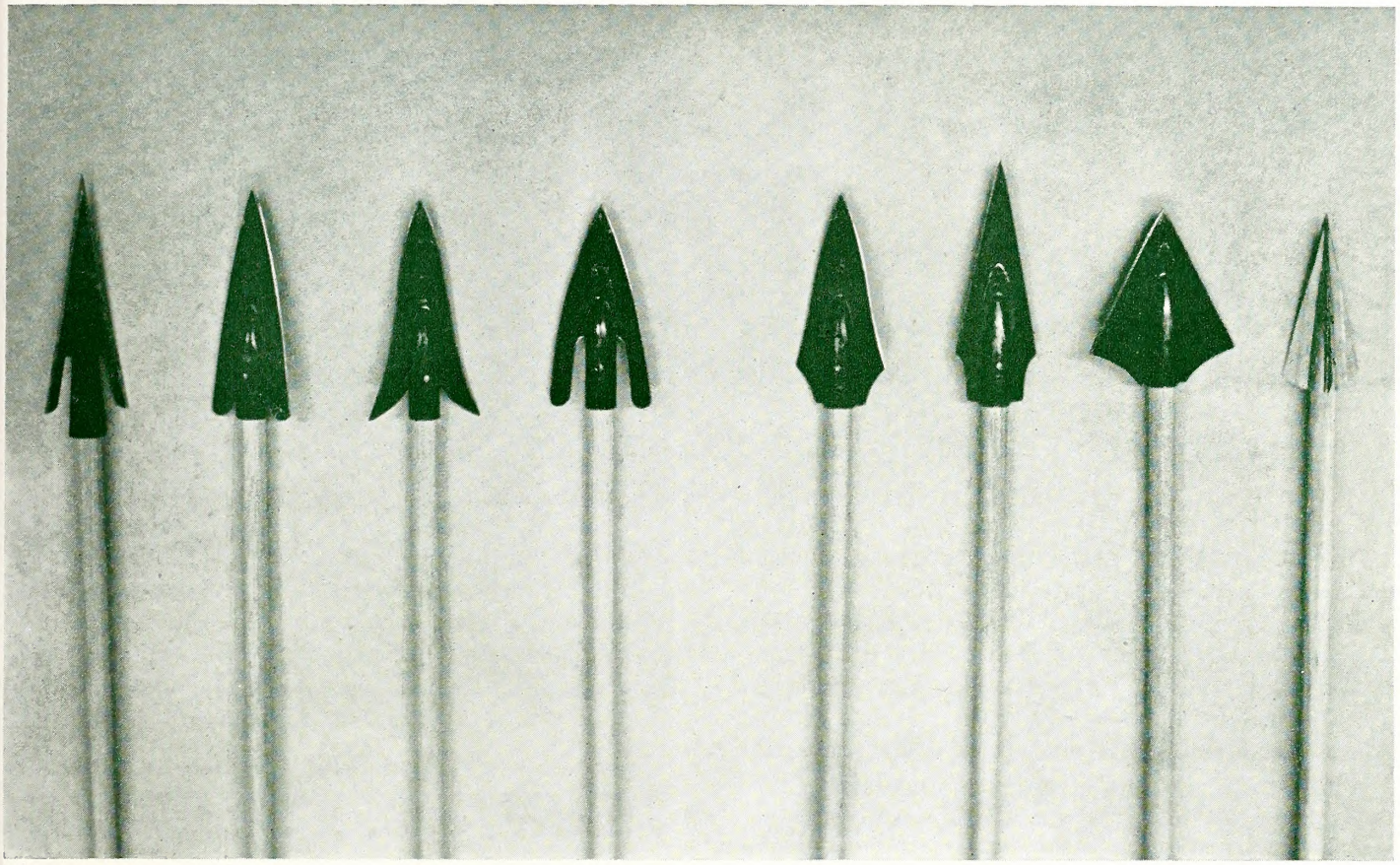


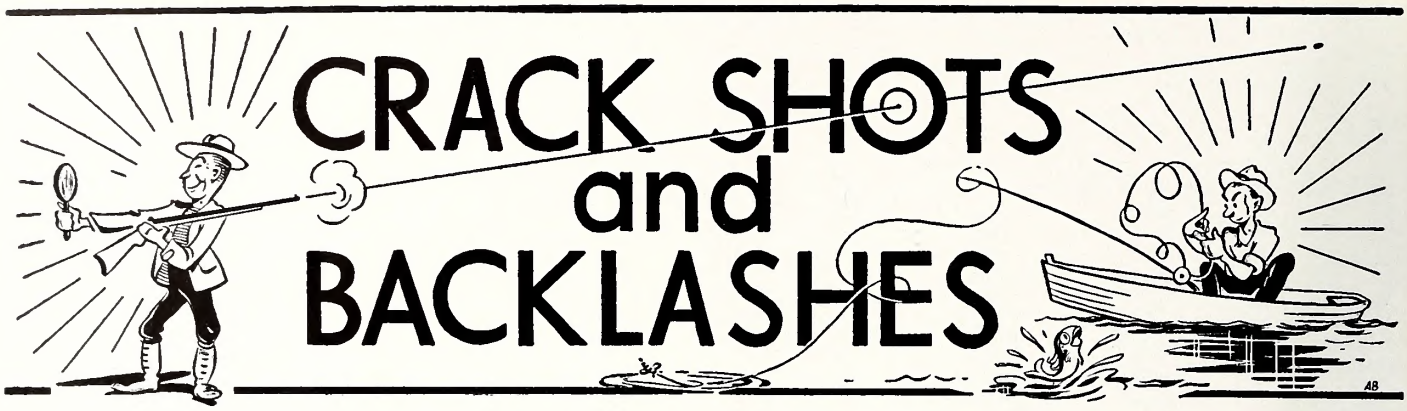
Photo by Jim Lee

LEGAL ARROWS DEFINED FOR BOW-HUNTERS

In answer to requests from a number of sportsmen who plan to take advantage of the law passed by the 1955 Legislature which permits the use of bows and arrows as legal weapons in hunting game animals, the Wildlife Commission at its June meeting established regulations governing the type of arrow heads permitted. According to the act which permits archers to use their weapons for hunting game, the arrow heads must be non-explosive, non-poisonous, and without barbs. Barbs on arrows are prohibited since wounded animals would not be able to dislodge such arrows if not killed. The Commission examined the above arrows, and concluded that the four at left are barbed while the four at right are not. Notice that the four at left have barbs which would tend to hang in a deer's flesh. Although two of these have rounded barbs, they are still capable of catching a tendon and would be illegal. The Hilber head, at far left, is barbed and would be illegal; the three-bladed Bodkin head at far right is permissible since it can be withdrawn from the animal's flesh without tearing.

WILDLIFE COMMISSIONERS TAKE OATH OF OFFICE

Recently appointed by Governor Luther H. Hodges for six-year terms as members of the North Carolina Wildlife Resources Commission, (left to right) G. E. Beal of Red Oak, O. L. Woodhouse of Grandy, and Robert M. Carr of Wallace are pictured as they were officially sworn in by Associate Justice of the Supreme Court Jeff D. Johnson. Woodhouse, a Currituck County businessman and farmer, and Beal, a farmer and tobacco warehouseman in Nash County, have already served for six years, while Carr, a prominent oil distributor in Duplin County, brings to the Commission his valuable experience as a legislator.



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

August is probably the most popular vacation month on the calendar. Literally thousands of tourists will be in North Carolina, adding more traffic to already crowded highways. This means more tragedy for home folks and tourists alike. Here are a few tips that might make your vacation a time of happiness and recreation rather than injury or worse.

Start early, and take your time getting there. Remember, you're supposed to be going on vacation, not to a fire.

Be courteous. It is contageous and it saves lives. Watch out for the other driver as well as yourself.

Beware of driving fatigue. Switch drivers if you can, and make frequent stops for rest and refreshments of the non-alcoholic variety.

One of the best ways to live beyond 55 is to drive under 55.

This month's cover is by a young man who is making a name for himself in the field of illustration. Bill Ballard is staff artist for the Raleigh News and Observer. He has studied art for a number of years, and has developed a fine, recognizable style. For several months Bill has wanted to do a cover for WILDLIFE. His first effort appeared on the May issue, showing a father teaching his son about the rules of angling sportsmanship. Bill used live models for the watercolor.

It might be worth while to turn back to this month's cover and take another look at it. There is humor there, and pathos, if you consider a nice dose of sunburn to be in the realm of pathos. Notice that the old gentleman is examining a nice bream to see if it is big enough to add to his string. Not showing off to the men with all the equipment, exactly, but he chose a nice time to drag the string out of the water.

We predict a bright future for Ballard in the field of magazines illustration. Send us more stuff, Bill!

The back cover was dreamed up by Jim Lee of the WILDLIFE staff. He passed it along to Al Barrett who did the final draft and gave Jim a cobyline. Al does art work and ad layout for Carolina Power and Light Company in Raleigh, claims to be a fisherman and somewhat of a hunter. He did a nice cover (raccoon) some time ago, and has been turning out back covers consistently.

Back to the current issue, however, we'll wager every fishermen in the state has at one or more times had a desire to do what Jim and Al's character is doing.

Judging from the small number of changes made in the 1955-56 hunting rules over the past season's regulations, most Tar Heel sportsmen are rather well satisfied with the way the Commission is going about its business. For years emphasis has been placed on simplicity in hunting regulations, with prime consideration given to the species involved and the interests of sportsmen running a close second.

The U. S. Fish and Wildlife Service will probably announce migratory game bird seasons and bag limits some time this month. First seasons will probably involve doves and marsh hens.

SIXTY POUNDS OF FONTANA BASS

Photo by Rusty Graef

Three Tennessee anglers, W. C. Watkins, Raymond and Lynn Morton, display a 60-pound string of bass taken in two days at Lake Fontana. Not shown are more than 200 pounds of catfish caught on the same trip.

"Dear Sir:

"I am enclosing subscription blank and check for two-years subscription to WILDLIFE IN NORTH CAROLINA." The price is, of course, much too low, however, I suppose it is subsidized on the basis of its public relations value.

"The first sentence of Mr. Cornell's article on White Shad may hold true in your state, however, it is inconceivable to a Maryland fisherman that such a statement could appear in print. The best fishing is, of course, in the Susquehanna from Conowingo Dam all the way down and out into the bay. On Sunday, May 28, there must have been at least 150 boats anchored at the B. & O. bridge, and every boat had from 6 to 25 fish on their stringers. A three pound White Shad on light spinning tackle is really terrific!

"You, of course may not have the same type of fishing grounds, however, you do have the shad, and I suggest that next May, two of you drive up and spend a couple of days preferably during the third week of May. Either Ed Wode, who has called on you I believe, or myself would consider it an honor to take you over the grounds and place at your disposal my 14 foot runabout with Evinrude 15 for the balance of your stay. Please get in touch with me next spring if interested.

"I might comment that we are now putting stripers into the enormous lake above the Dam, and have high hopes that it will work out as it did in the Santee-Cooper area.

Sincerely yours,
R. L. Rianhard
Baltimore, Maryland"

There is no doubt that the shad is a tremendously important game fish in Maryland, and is becoming increasingly popular as a game fish in North Carolina. Despite this, however, on a general basis and considering the species as a whole, the shad is not commonly thought of as a game species. Shad fishing is a high specialized art where the angler is concerned. Although the sport of shad angling is on the increase, it will never surpass the largemouth bass or the lowly bream.

Harry Cornell hopes that Maryland will provide canal locks at Conowingo Dam similar to those at Santee-Cooper so that rockfish can continue to come up from the ocean. It still remains to be shown that the rockfish has become definitely landlocked anywhere, although a number of states including Tarheelia are working on it. Once landlocked these fish would be a wonderful addition to the game fish roster in suitable inland waters. Time will tell.

"Dear Sir:

"For some time now I have been trying to locate a live flying squirrel. It is my understanding that they are quite abundant in your region. Could you possibly give me the address of a source where I might obtain a pair of live specimens.

"At present I am conducting a study of natural flight and I would like very much to include the performance of the American flying squirrel in my study. With a couple of live squirrels I could make measurements of the flight capabilities of these animals.

"Any assistance that you might be able to give me in acquiring a pair of these animals would be greatly appreciated.

Yours sincerely,
Joseph J. Cornish, III
State College, Mississippi"

We are passing Cornish's letter along to WILDLIFE readers who may be able to round up a pair of flying squirrels for him. His original letter was addressed to the High Point Chamber of Commerce and passed along to us.

Few people ever see flying squirrels, incidentally. They are nocturnal critters and do most of their sailing around at night.

"Dear Sir:

"With some encouragement from the State Advertising Division that the venture would be a welcome public service, we have published a fishing and hunting map of Western North Carolina with both location details and information to help the user of our Wildlife Resources. We have also published with the same idea in mind two map folders showing in detail the lakes of the Eastern and of the Western Mountain area.

HAVE YOU SELECTED YOUR MULTIFLORA SITE?

Photo by Jack Dermid

The snow in this picture may seem out of place in August, but it should serve as a reminder that the time to think about planting a fence of multiflora rose is right now. This planting, bare of leaves in winter soon will replace the barbwire fence, and is higher than Game Biologist Charlie Woodhouse's head.

Last year we published in cooperation with the Kerr Reservoir Development Commission a three-color lake map. You will note from the samples of each enclosed that these are in no wise an advertising promotion, but simply an effort in the public service view to have reliable and detailed information available for the visitor and for the citizens of the state.

"We hope you will be able to support this project since it comes directly within the purpose for which the Wildlife Resources Commission was created. We can offer these maps at the same rate for your use as already they are being supplied to Chambers of Commerce: 5¢ per map in lots of 2,000 or more. You may have the privilege of assorting your maps in the order since they come in packages of 100 maps. We realize that you are now near the end of your fiscal year and may want the billing placed after June 30. This is perfectly agreeable with us, but we do need your support in getting the maps out now that we have gone to the expense of drafting and lithographing with the best help available from reliable official sources. Won't you throw your support behind this publishing project by sending your order promptly, giving your choice under the assortment privilege outlined above?

Yours very truly,
The Stephens Press
Asheville, N. C."

Sorry, WILDLIFE can't order any appreciable amounts of these maps. We have seen them, however, and they are excellent. We get frequent requests for articles on the subject of where to go vacationing, but must stick to conservation-education materials. The best we can do is recommend this map very highly to our quarter of a million readers.

"Dear Sir:

"I read with interest each month the letters sent to you by sportsmen in North Carolina but I never thought I would have have occasion to write you myself but I do have a question.

"Several years ago I was told that the Largemouth Bass have worms during the spawning season. I did not get excited about it because I never did find any of the worms.

"I have just returned from a fishing trip and some of our party of twelve were quite upset about the worms because we did find worms in the mouth of some of the fish.

"Please tell me do all Largemouth Bass have worms during the time they are spawning or is this a condition which exist in just certain waters? Do the fish get rid of the worms after spawning? Are the fish suitable for eating while they have worms? Are the worms harmful to the fish or do they serve a purpose?

Sincerely yours,
Ralph G. Wood"
(No Address)

Mr. Wood overlooked sending his return address, so Harry Cornell asked that his reply be entered in these pages for the convenience of all interested parties (—Ed.)

Mr. Ralph G. Wood
(No Address)

Dear Mr. Wood:

This is in reply to your inquiry concerning worms in the mouth of the bass which you caught. It is not at all unusual to find such a situation. In fact, most fish are parasitized in one way or another.

Of course, most of the parasites are located in the digestive tract and never are observed by the fishermen. Others bore into the flesh and become incysted there.

The only objection in eating parasitized fish is an aesthetic one. The parasites are harmless after normal cooking. Of all the fish parasites we have, only the bass tapeworm can affect man after it is consumed raw. Any of the many others could safely be eaten without cooking. Since fish are eviscerated before cooking, it is entirely safe to eat any fish you catch.

Very truly yours,
J. H. Cornell
Chief, Fish Division

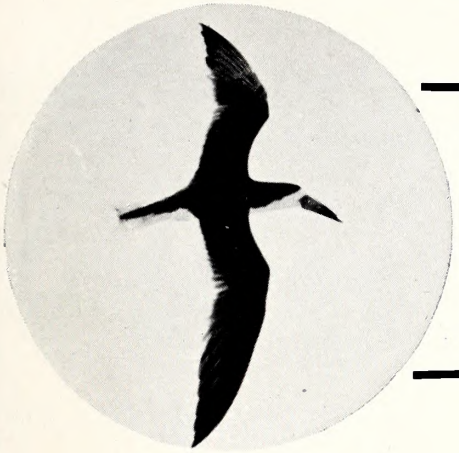
PEOPLE AND PLACES

Fishing can be fun! Especially if someone like Kay Baker of Taylorsville is around to decorate the landscape. This scene caused one of WILDLIFE'S roving cameras to pause for a moment.

Photo by Jim Lee

Not a record catch by any means, but to Mike Grigg of Smithfield it's a pretty good haul. Mike, son of Mr. and Mrs. Clyde Grigg, grinningly demonstrates one of the values of taking a boy fishing.

Photo by Fuller Rice



The Black Skimmer

A NATURE SHORT by JACK DERMID

One of North Carolina's most unusual and interesting birds is the black skimmer, a large black and white coastal bird that is frequently seen flying low over the water with its bill cutting the surface.

With slender scythe-like wings and a peculiar red bill tipped with black, the skimmer is the only bird of its kind and is easy to identify. It is about 1½ feet long with a wingspread of about 4 feet, yet it is very graceful in flight and flocks can maneuver with great precision.

Close examination of its bill through binoculars reveals an odd structure, indeed. It is flattened vertically. The upper and lower mandibles can be compared with two knife blades placed edge to edge, the lower one being a fifth again longer than the upper one. The bill seems too gaudy and awkward to be useful, but the black skimmer finds it the ideal tool for harvesting a bountiful crop of minnows and other small marine life. It is said the bird skims along the surface with its lower mandible immersed and picks up food as it moves along. Its method of feeding is not too well understood, and one theory holds that the skimming habit attracts minnows to the surface of the water and then the bird catches them on a return flight over the same area.

The black skimmer is a noisy bird, and its coarse, guttural voice can be heard both day and night. Its call has been compared with the yelp of a hound. A disturbance in a nesting colony will set up a tremendous din as numberous birds circle about in protest.

Nesting occurs mostly in June and July on the sandy beaches and islands of our sounds, inlets, and river estuaries. Three to five handsomely marked eggs are laid in a depression in bare sand or shell fragments where they blend so perfectly into the surroundings that care must be taken not to step on them.

Look for the black skimmer on your next visit to our coastal areas and meet one of the strangest characters that flies.

A single plant marks the location of this skimmer's nest on an expanse of sand. The decorative eggs, white to pale buff or pale greenish-blue, are often heavily splotched with chocolate and lavender. There is a great variation in the markings.

A flock of black skimmers circle noisily over their nesting colony on Shark Shoal Island near Beaufort. Dozens of nests were scattered over the sand. Graceful in flight, the skimmer seems clumsy on land. Its bill appears top-heavy and its small feet and legs are out of proportion to the rest of the body.

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Wildlife

SEPTEMBER - 1955

TEN CENTS

in north carolina

Long-Billed Marsh Wren

by Robert B. Danc

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

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Governor

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COVER

Soon September school bells will ring, and two Manns Harbor youngsters, Ray (left) and Stan White take advantage of their wonderful summer freedom by catching a fine string of white and yellow perch and bluegills in East Lake. Color photo by Jack Dermid.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors. Full credit is given for all materials published.

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1955-1956 Hunting Outlook

by Clyde P. Patton

Executive Director, N. C. Wildlife Resources Commission

By midsummer 1955 there was every indication that North Carolina would harvest one of the biggest yields of agricultural crops on record. Here and there hailstorms and late frosts had cut down production, but for the most part the outlook was excellent.

But what of the harvest of another crop—wildlife? If hunters are to find an abundance of game during the fall and winter they can thank the thousands of Tar Heel farmers who have been cooperating with state conservation agencies in producing more farm game for an ever-growing number of hunters who go out for rabbits, quail, squirrels, and other game which dwells on agricultural land.

Along North Carolina's vast coastal marshes waterfowl will soon come in from northern nesting grounds. In the forests of the coastal plains and the mountains, deer and bear, our important big game species will be legal prey. As the harvest season for game approaches many a hunter will ask himself "what will the harvest be?"

It is impossible to answer this question without considering all of the factors that have affected game populations during the past year. Considering seasons and bag limits which reflect relative scarcity or abundance of game, general conditions during the coming season will approximate those of a year ago.

A heavier demand for coonskin caps this year may seriously affect the coon population in the eastern sections, but the supply should be more than adequate for sportsmen.

Photo by Jack Dermid

All wildlife populations are subject to two forces: those which tend to build up an increase and those which tend to bring about a reduction. Both forces, though opposing, are a combination of natural conditions and human influence on them.

Last winter was a severe one with more snow in most sections than usual and frosty weather in the spring. These had an effect on the winter and spring food supply. There were heavy rains during the spring nesting season to curtail quail and rabbit production. Forest fires were rampant in many areas, destroying wildlife habitat as well as valuable timber. Some were caused by lightning, more by human carelessness, others by deliberate vandalism. Late frosts destroyed some of the mast crop for the coming winter and fruits and berries that might have served for summer food. This damage, fortunately, was local and seldom severe.

On the other side of the ledger, wildlife habitat plantings, good land and forest management, and adequate rainfall over most of the state tended to benefit wildlife populations. Altogether, it appeared that the game supply this fall for the most part would be sufficient to satisfy the wants of a majority of hunters.

The migratory game bird picture was not altogether clear. For the most part duck and goose nesting in the northern breeding grounds was successful, but it was doubtful if there would be enough increase of these species to be reflected in a longer season or a more liberal bag limit. In many sections of the country there was strong sentiment toward a return of legal baiting for waterfowl, and there was some demand for the return of live decoys. Decisions on these matters, however, rest with the U. S. Fish and Wildlife Service which sets the ground rules for waterfowl hunting.

Along the salt water marshes rails and gallinules would probably far exceed the demand for them. Marsh hen shooting has become almost a lost art on the North Carolina coast, but interest in this sport is increasing.

Dove populations will probably approximate those of last year, although many biologists believe that dove populations have been suffering a downward trend for the past several years. As in the past, best dove hunting will be in the early part of the season when there is still waste grain to be found in the fields and doves are concentrated in flocks.

As to seasons and bag limits for native, non-migratory game, these very closely approximate those of last season, with only minor changes in dates to make adjustments to the calendar. This year, for the first time, it will be legal to kill native game with the bow and arrow. Archers will be allowed to enter the woods two days in advance of the regular season, before game has been disturbed by gunfire. Archery is an exacting sport, and although enthusiasm has been growing for the past several years, it is doubtful that any significant amount of game will be taken in this manner.

Let's consider the upland game hunting outlook species by species:

Deer: Apparently only a very few deer were destroyed by forest fires. Many more were killed by stray dogs during the fawning season, and occasional animals were taken illegally by firelighters. The total deer population for the state was somewhere near 150,000 with an expected kill this season of around 15,000 to 17,000. The 1955 Legislature did not make possible the taking of doe deer in areas where the sex ratio of herds has become unbalanced. The Wildlife Commission's big game development program has established harvestable deer herds in sections where deer have been entirely absent for a number of years.

Bear: It may be expected that usual conditions will prevail with regard to the distribution of our largest game animal. Bear will be most numerous in the swamps and forests of the Coastal Plain, absent in the Piedmont and fairly abundant in the Mountain section.

Wild Boar: Found only in the extreme western end of the state, wild boar will be hunted on a managed hunt basis in most of their range. Indications were that boar populations would be about the same as last year, with some increase. A highly specialized sport, wild boar hunting is done by only a few hunters who are willing to endure any hardships involved.

Raccoons: The days of raccoon abundance in eastern sections of the state may be numbered. Some biologists predict that the coon has passed the peak of the population cycle, and is about to go into a decline. In most western sections of North Carolina, coons have been scarce and there has been a heavy demand for stocking.

The most important factor with regard to coon populations might be traced directly to Davy Crockett and his exploiters. Nearly every youngster in the country wants a coonskin cap, and the demand has apparently exhausted warehouse supplies of cheap coon pelts. Continued for a year or two, this demand may well bring about a rise in the price of coon skins and a heavier demand for the species.

Opossum: Continued light hunting pressure over the years has brought about a high population of these animals and they should be abundant throughout their range this fall. The 'possum is not popular as a game animal, and pelts are not worth the trouble of pelting.

Squirrels: Again the state has been divided into three geographic zones regarding the squirrel season. This adjustment has been made so that the hunting seasons are compatible with the breeding seasons of the animals and the occurrence of bot larvae or "wolves" which infect their flesh during the warm months. Squirrels have a long breeding season, and this makes necessary careful adjustment of the harvest period to breeding time. Although there will be local mast crop failures and consequent shortages, the general squirrel population and harvest should be about the same as last year. Local shortages will be balanced or exceeded by increases in other areas.

Rabbits: The cottontail rabbit will be plentiful in some areas, but in rather short supply over most of

●——————See OUTLOOK Page 23

Reports indicating a successful nesting season for waterfowl mean that this scene will be duplicated many times along the Atlantic flyway, with the hunter's bag equaling that of last year.

Photo by Jack Dermid

FORES

Professio

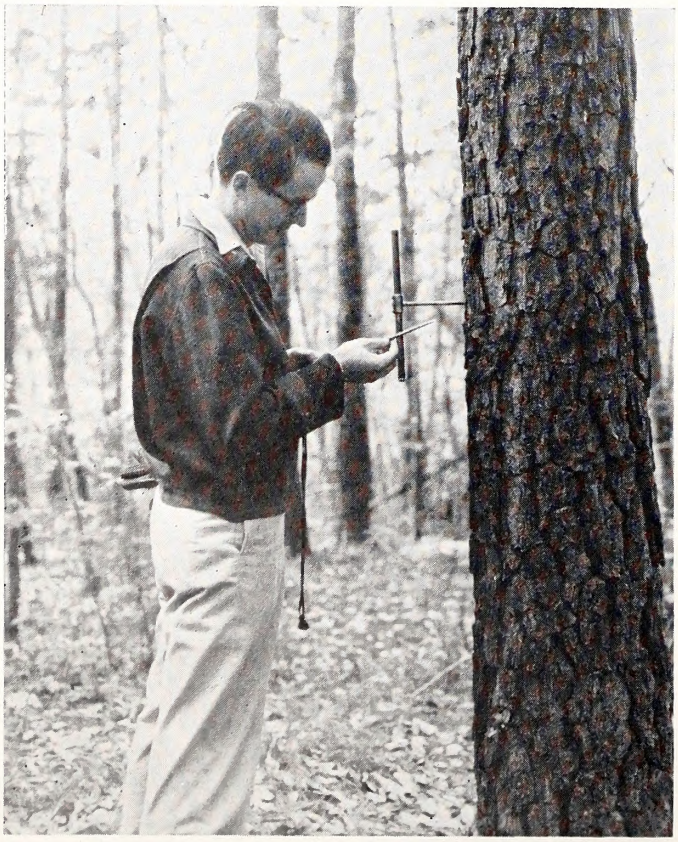
Did you think North Carolina's beautiful forests just happened? What do you know about the men whose job it is to grow, protect, and utilize our 19 million acres of forests? A brief glimpse of their important task and their varied activities is presented in the following paragraphs.

If you had been in Tyrrell, Columbus or one of several other North Carolina coastal counties when one of this Spring's devastating wildfires was turning thousands of acres of green timber into clouds of smoke and beds of ashes, you would have seen an exciting battle in progress. Towns as well as trees were threatened. Men were fighting flames with water, plows, hand tools, bulldozers, and even fire itself. Lookouts in fire towers and spotters in low flying planes were radioing reports of the fire's progress to those directing the ground battle.

Some of those engaged in such wars against wildfire are foresters, but few foresters spend more than a small fraction of their time directing fire-fighting operations. Yet those operations are so spectacular that many of us know little about a forester's other activities and responsibilities.

Take yourself for example. Did you know that as you read this article foresters right here in North Carolina are likely doing such varied tasks as advising land owners how forests can be cut to assure regeneration of a desired species, cross-breeding trees to obtain seed which will produce stronger, straighter, and faster-growing trees? Directing logging operations from the bottomlands of the coastal counties to the slopes of Mt. Mitchell, measuring the amount of water and topsoil flowing from carelessly logged woodlands? Developing new uses for wood chips and sawdust, and controlling the water table so that forest trees will have neither too much nor too little water regardless of rainfall?

By removing small cores from sample trees foresters find how fast their forests are growing, thus enabling them to study the effect of past treatment on tree growth, as well as indicating when the forest is ready to be harvested.



What Forestry Is

Yes, the forester's job is a varied one. But basically his job of "Forestry" is that of growing better forests, and then making more effective use of the forests' many products.

To grow better forests, foresters control the type of trees that grow in our forests, their size, the amount of competition they will receive from other trees and shrubs, and sometimes even the amount of water the trees will have available for use. And of course they must also protect the forests from destructive insects, diseases and fires.

In making more effective use of the products of the forest, foresters are concerned with such matters as improving recreational facilities and keeping the water in our forest streams clear enough for city water supplies and cool enough for game fish, as well as designing more beautiful wood furniture, making better plywood panels, and producing stronger lumber.

Some Examples

Foresters are active throughout the nation, but particularly so in the South where forests grow unusually well and produce high quality products. Let's just look around our own state as an example and see what some of our local foresters are actually doing.

If you live in Plymouth, North Carolina, you probably know Mr. Ken Trowbridge. He is chief

TRY

f Woodsmen

by Prof. Carl H. Stoltenberg

Duke University, School of Forestry

forester for the North Carolina Pulp Company. The task of Mr. Trowbridge and his staff is to grow wood which his company will convert to paper products in their Plymouth mill. Mr. Trowbridge's foresters may be found planting open and unproductive land to pine, while others are using chemical and other means to keep back brush and undesirable tree species on company-owned land. Still others are measuring trees to determine the rate at which the company's forests are growing timber. And several are employed to help farmers plant trees or show them how to cut and sell certain trees from their farm woodland and improve the quality and quantity of growth on trees that are left.

Ed Buckner is county forester in Gastonia. You will find Ed working with farmers and small-land owners, showing them how and when to cut trees in order to receive the most returns and obtain a healthy stand of young trees in their place. The State Forester, the man to whom Ed and the other county foresters are responsible, is Mr. Fred Claridge, who lives in Raleigh. Some of his foresters are growing tree seedlings at the forest nurseries near Clayton, Goldsboro and Hendersonville. And other foresters under his direction are responsible for controlling wildfires on private forest land in the state.

Ed Johnson is a research forester at the Coweeta Hydrologic Laboratory near Franklin, in western North Carolina. He is engaged in forest-watershed studies for the U. S. Forest Service. Ed and his fellow foresters have found that by controlling the amount and nature of the vegetation on a hillside they can control such important conditions as the amount of water that flows downstream from that hillside as well as the amount of rainfall that seeps into the soil, the amount of soil erosion that will take place, and even the cleanliness and temperature of rivers farther downstream. Ed is now directing studies to determine how overgrazed and destructively logged hillsides can be made again to yield clear, cool water regularly throughout the year. Other research foresters are studying ways to improve tree characteristics and growth through tree breeding, how to control forest-insect outbreaks, how to develop more valuable trees by thinning forest stands, how to produce greater yields of paper from a smaller amount of pulpwood, and other important problems.

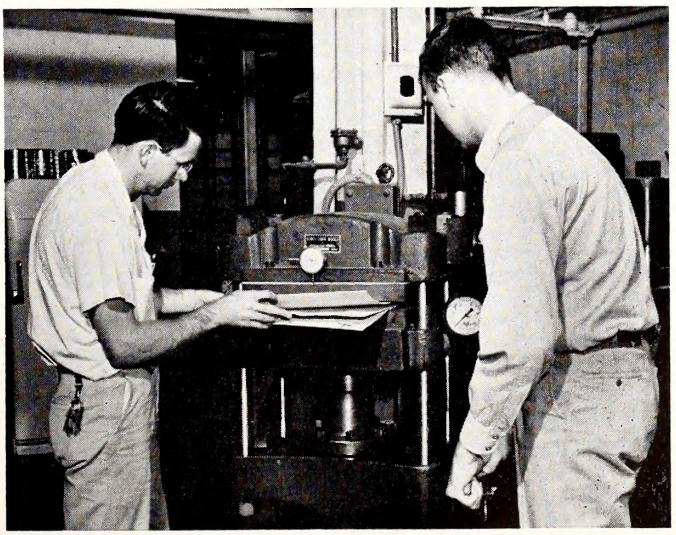
Charles Carey is plant superintendent for the Drexel Furniture Company at Table Rock, North Carolina. He too is a forester. He and his associates use their knowledge of the technical properties of wood in the design and construction of structurally sound and beautiful furniture that will stand the test of many years of use.

Dr. C. W. Ralston is professor of forest soils in the school of forestry at Duke University. In addition to teaching forestry students about soil conditions and their relation on tree growth, Dr. Ralston is directing research on the control of water in some of the low wetlands along the coast. If water on these lands can be controlled, tree growth can be increased and better species grown on some of these sites.

Career Opportunities

From this brief glimpse into the activities of a few of North Carolina's professional foresters, we have seen that forestry offers young men opportunities to serve society through a career in conservation in either public or private employment. Although positions in forest management, research and teaching are open in public agencies and institutions, careers with private organizations are offered in the same fields and in the field of applied forest-products technology as well. In fact, some

On small test machines foresters study the effect of new bonding methods on the strength and durability of plywood. Constant research has produced such useful products as our modern waterproof plywoods that are suitable for household use as well as for aircraft and racing boats.



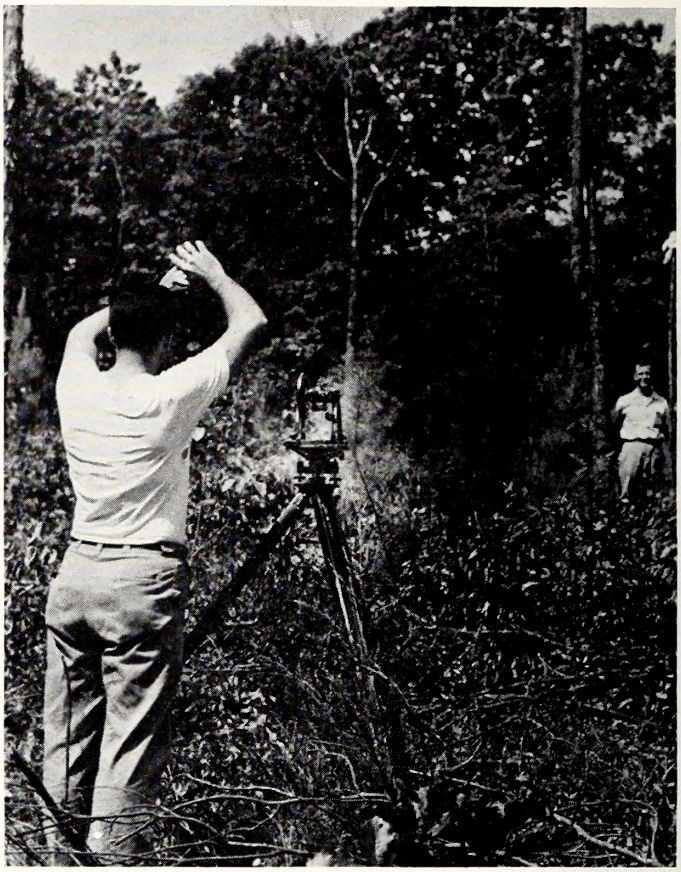
of our foresters are self-employed consultants, offering extensive services to private land owners on a temporary basis. Of North Carolina's 317 foresters, about eighty percent are engaged in managing forests or forest-products-conversion operations. Over *two-thirds* of these are employed by private concerns or are self-employed consultants. The remaining twenty percent include foresters who are engaged primarily in teaching or research.

Each year more foresters are needed to manage our forests and make efficient use of forest products. Today there are more than four times as many jobs for professional foresters as there were in 1930. Each year the number of job opportunities exceeds the number of qualified graduates. Current opening salaries range from $290 to $350 per month, depending on qualifications. With experience, salaries range upward essentially without limit, as foresters are now becoming executives in land-holding companies. Do you know promising high school students who would enjoy the life of a professional woodsman? Opportunities await them in forestry if they are physically capable and willing to obtain the necessary educational qualifications.

Education Needed

A bachelor's degree in forestry from an accredited college or university is the minimum requirement for immediate recognition as a professional forester. North Carolina is rightfully proud of its two forestry schools at North Carolina State College and Duke University. They rank among the nation's finest. Fortunate also is the fact that the two schools offer different approaches to forestry education. North Carolina State College offers a four-year program leading to a bachelor's degree in forestry. Duke University's forestry school, requiring a broader background in the arts and sciences, offers its primary work on the graduate level toward the Master of Forestry degree. Duke normally bases its two years of concentrated forestry training on a foundation of four years of broad education in a liberal-arts college.

Both schools have recently developed cooperative programs under which students may take part of their pre-professional college work at other colleges in the region. Normally two years of the required four-year program may be taken at other colleges before entering the N. C. State School of Forestry. And superior students may now complete the Master of Forestry program at Duke by taking a specialized three-year curriculum at a cooperating college before transferring for the final two years at Duke University. Because both programs require the student to take previously-approved, well-balanced programs at the cooperating colleges, prospective students should write to the school selected before starting their college education. Additional information on forestry careers can also be obtained from both forestry schools.



Surveying to establish property boundaries and to lay out forest roads is a common task of many foresters. As with most of his responsibilities, this requires technical skills, common sense, and outdoor work.

The Future of Forestry

Shortages of raw materials in the pulp-and-paper, plywood, lumber and other forest industries have caused industrial managers to take great interest in the ability of foresters to produce larger volumes of timber from company lands. Foresters have also made great contributions by discovering means of more efficient utilization of the wood produced. As such non-renewable natural resources as iron and the other metals become more expensive with decreasing availability of supplies, it is only reasonable to assume that wood will begin to replace metal in many uses. The rapidity of this replacement will depend on the ability of forest managers to grow sufficient quantities of wood at reasonable costs and on the ability of forest-products technologists to use the natural physical and chemical properties of wood in producing high quality products. Opportunities in forestry are indeed excellent for young men who are capable of meeting this challenge of greater and more efficient production and utilization.

Top-Water Fishing

by Duane Raver

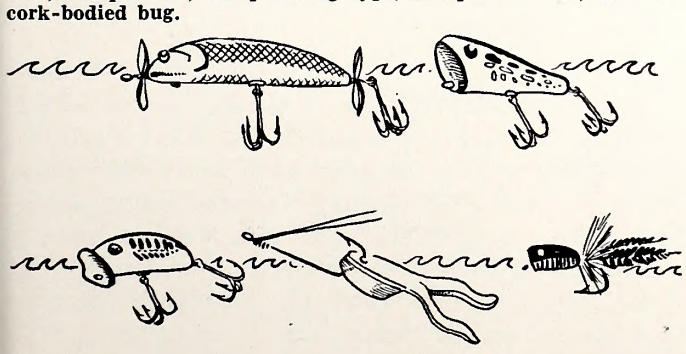
Illustrations by the Author

You will seldom find any angler more devoted to his brand of fishing than the top-water lure man. And why not? Who would trade the dazzling smash of a bass at a surface plug for the unseen lunge of the same fish ten feet down in the green shadowy depths? And bluegills! How they smack those little popping bugs! So, for thrills in fresh water fishing, the taking of bass, bluegills, robin, trout, and even crappies and pickerel on top is just that—tops.

Like any single type of fishing, surface angling has its limitations. Midsummer top-water fishing takes patience, skill, and a lot of know-how to produce scaley sinks consistently. Relying exclusively on surface baits, whether plugs, popping bugs, or dry flies, is similar to playing a round of golf with a putter. It can be done, but better sport is possible with more varied tactics and equipment. But, we'll stick to surface lures in this article.

Let's take plugs for bass, for example. Even here, right off the bat, we're swamped with types, varieties, shapes, and sizes. So to narrow them down, pick out about four of the multitude of top-water fish-getters. For example, one of the oldest and one that still rates in the top five in popularity is the injured minnow type: usually a fat, tapered plug with propellers fore and aft and two treble hooks. The success secret here, as in most lures, is the action imparted by the angler rather than color, shape, or make. The second type of floating bait you might select is the plunker variety. The front end of the plug is concave or dished, so that a sharp pull on the bait creates a "plunk" or bubbly disturbance on the water. The paddling type of surface lure would be a good third selection, and here you have two or three from which to choose. The fourth type is the seldom-used, but often devastating, pork chunk on the weedless hook. Designed for scrambling through heavy growth of lily pads and other aquatic vegetation, the pork chunk definitely has a place in the surface angler's repertoire.

Five types of top-water lures are illustrated: the injured minnow, the plunker, the paddling type, the pork chunk, and the cork-bodied bug.



So much for basic types of bass plugs on top. Now, how do we get results? First, some general suggestions which have been found helpful in nabbing many a napping bass. Spring fishing on top sometimes is surprisingly poor and often the subsurface baits pay off much better. Contrary to most written advice, one of the most productive times for good surface fishing for bass in spring is around noon! Not so in summer. Just at daylight, when you can barely make out the overhanging trees and when the vapors begin to drift up from the glassy lake surface, then is summer's best top-water bass fishing. Second best is in the dead of the darkest night; and a strong third, from around 6:00 p.m. until the mosquitoes start chewing holes in you.

Where do you fish these surface fuss-makers? Casting toward shore and placing the lure as near the bank as possible seems most productive. And there is something very compelling about snags and stumps to cast toward. Blankly, rather aimlessly, pitching a plug into watery space always seemed futile to me; but occasionally, bass cruise this open water and will pick off a plug in these areas. When you are fortunate enough to happen on to a school of surface-feeding bass in open water, approach cautiously and drop your plug on the outside of what feeding activity you may see. Probably you will come up with a white bass rather than a black bass. Generally then, the edges of ponds and lakes where the water is from two to four feet deep, preferably with snags and brush, is ideal top-water casting grounds.

One problem area that often confronts the bass fisherman, either in farm ponds, eastern lakes, or slow-moving rivers, is created by water lilies or allied aquatic plants. Bass like shade, and these aquatic umbrellas serve nicely in this respect. But how to fish them? One fairly successful method is the use of the pork chunk or pork frog and a weedless hook. Adjust the wire weed guard and let fly right in the middle of these submerged jungles. Start your retrieve even before the lure stops. This keeps it skittering along the surface, over pads, and darting in and out of the small pockets of open water. Your problem is solved until you hook a bass; then, chances are you will go to him rather than bring him to you. It fills the stringer oft times, but some anglers consider it the hard way.

The basic secret of success with the floating plugs

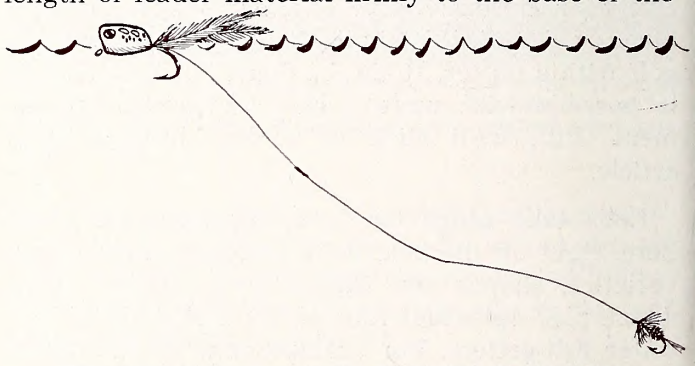
is patience and a slow retrieve. A steady retrieve with no hesitation will take bass; but the cast that lets the bait lie still for 20 to 30 seconds then starts it back a twitch at a time with numerous pauses, takes more and larger fish. Ordinarily, bass will bludgeon the top-water lure within three feet of where it lands; but be ready at that instant when you take the plug from the water to make another cast. It's a little disconcerting to have a three-pound bass pounce on the lure inches above the surface of the water, so be prepared.

Why do bass hit some of these floating contraptions? Certainly most of them look like nothing a bass ever saw before. The action is entirely foreign, and yet, wham! They take a cut a them. One explanation is anger. And it may be a valid one. A bass is a pugnacious critter by nature and often can be provoked into gobbling up a mouth full of hooks even though he is not the least bit hungry. And that suggests a second possible reason for bass hitting surface lures: hunger. An injured forage fish or a large insect makes quite a commotion on the surface and appears as easy prey for a hungry bass. But whatever the reason, thousands of nice bass succumb to surface lures annually.

There will be times when the larger bait casting lures will serve only to frighten even the most audacious bass. These occasions call for smaller spinning baits or even floating flies. Almost all the popular ⅝-ounce size top-water plugs have ¼-ounce spinning editions which can be deadly. Less splash as they settle on the water; more delicate action; more twitching and alive-appearing. Some of them can be handled on light bait casting tackle and often make an excellent showing when used on skeptical bass.

A few sessions with the right combination in fly tackle and surface bass bugs may change your outlook on life—or at least on bass fishing. Emphasis should be given to the "right combination" in tackle when throwing the wind-resistant bass bugs. Nothing under a 9-foot 5-ounce fly rod with plenty of backbone seems to do the job. A stick of this calibre requires at least a C level line and more often a torpedo head line of GBH diameters. Heavy leaders tapered from twelve-pound test to five help lay the bugs out nicely.

Cork-bodied bugs are more popular than the plastic ones, and the less hair and feathers the better. Make sure the lure floats as high as possible and is easily picked off the water. Lay the fly out as far as is comfortable and let it remain motionless until all the widening rings have disappeared from the surface. Twitch it and make it come alive. Fish it slowly until it's close enough to pick up without a lot of commotion. Fish it around lily pads, stumps, or brush. You might try tying a 14-inch length of leader material firmly to the base of the



The writer suggests a trailer fly behind the bass bug.

bass bug hook and affix a number 10 wet fly thereto. This trailer fly will account for some nice bluegills occasionally and even a bass now and then.

Dry flies are much easier to use than wet flies and generally catch more trout. This is just about the best way I know of to get smack dab in the middle of a small war of words. And since I'm not much of a trout fisherman, maybe we better not go into this lovely category of surface lures. They're deadly, though, and make up one of the most precise and beautiful methods of taking trout in all the angling world.

As capable as they are, the surface lures have one fatal pitfall: over-use. You can become so addicted to fishing the surface that soon all other methods fade into the rosy haze surrounding the splash makers. Temperance in everything, somebody said; and so it is with the floating bait. If they fail—and they will at times—try something else. There are lures that travel beneath the surface, or didn't you know?

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Dove Seasons Set By Fish and Wildlife Service.

The U. S. Fish and Wildlife Service has announced dates and bag limits for this year's shooting. The first season opens September 10 and runs through October 1, half days only, shooting hours noon to sunset. The second segment of the split season opens December 18 and closes January 9 with the same shooting hours. Bag limits will be the same as last year, 8 daily and 8 in possession. The total of 45 days of shooting is an increase of five over last year.

* * * *

Probable Waterfowl Season for 1955 - 1956 Gunning.

Although at the present time these dates were unofficial, it was generally believed that the waterfowl season for the current year would be from November 7 to January 14, a total of 70 days and one of the longest seasons for many years. The season reflects an increase in the number of birds produced in most of the nesting grounds that supply gunning for the Atlantic flyway. Bag limits remain unchanged over last year, with two geese daily, four in possession, and four ducks daily with eight in possession. In spite of general pressure throughout the country for a return of legal baiting and live decoys, these concessions were not made by the Fish and Wildlife Service.

* * * *

Marsh Hen Season Opens September 1.

The earliest legal hunting gets under way September 1 when marsh hens (rails, gallinules, sora) opens along the North Carolina coastal marshes. The season will run through October 30 with a bag limit of 10 daily, 20 in possession for rails and gallinules, with 25 sora daily and 25 in possession. Woodcocks, or timberdoodles, will be legal game on November 24 with a season running through January 2. Bag limit for these birds will be four daily, eight in possession.

* * * *

Wildlife Protection Training School.

Between 25 and 30 candidates for jobs as wildlife protectors will begin three weeks of intensive training September 4 when another training school under the auspices of the Institute of Government, UNC, Chapel Hill and the Wildlife Resources Commission will get under way. The men selected for the training course were screened from several hundreds of applicants. Only one other state in the nation besides North Carolina trains its wildlife protectors in college or university facilities.

Growing seasons are shorter in the mountains, and this early-blooming strain of shrub lespedeza may prove to be the answer to the problem of better quail food for the cooler climate. This new strain, VA-69, is now being tested at the nursery.

Located on a broad plain beside a dependable source of water, th cludes many acres of bicolor and other varieties of lespedeza a rose seedlings. Growth is rapid in the rich soil and is aided by mechanical methods of cultivation used at the nursery.

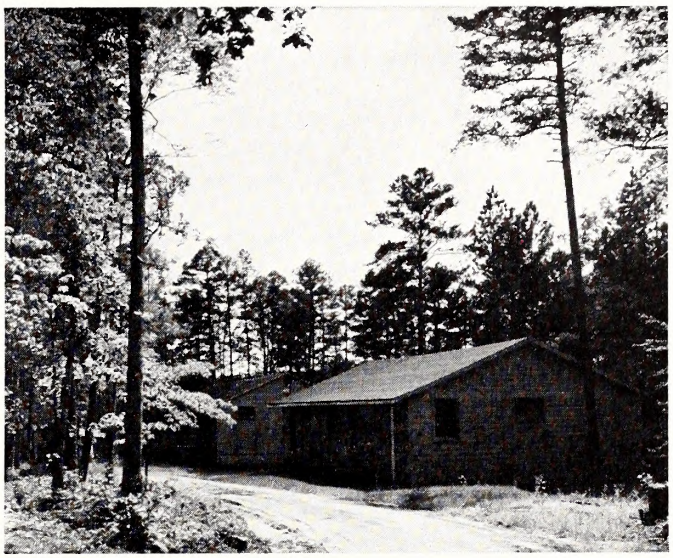
WILDLIFE FOOD NURSERY

Photo Feature by Jim Lee

There are some lucky birds living near Chapel Hill. Should they lack for entertainment, they need fly only a mile or so to the stadium and watch a football game this fall. They probably will since boredom is about the only problem in their lives. Their home is a 600-acre game refuge, with no nosy bird-dogs to chase them up in front of a hunter's gun. Food is the least of their problems. Of all the bobwhite quail in the State, they are probably the best fed; even though some millions of food and cover plants will be shipped from their home there will be plenty of food left for them during the winter. Home for these birds is the Wildlife Materials Nursery at Chapel Hill, where the Wildlife Commission is producing food and cover plants such as multiflora rose and several varieties of lespedeza to be distributed free to farmers and other landowners who wish to improve game habitats on their lands. Along with growing these plants for free distribution, the nursery tests and develops new varieties of food plants, and experiments with new methods of improving the growth of the thousands of miles of border strips and thousands of acres of food patches that Tarheel sportsmen have already planted. Managed by Donald Hankla, a game biologist who is also an expert farmer, the nursery is said by qualified observers to be the best of its kind in the nation. In operation only a year, the nursery is ready to begin supplying the Commission's game management areas and the individual sportsmen with millions of seeds and seedlings to improve food and cover for wildlife throughout the State.

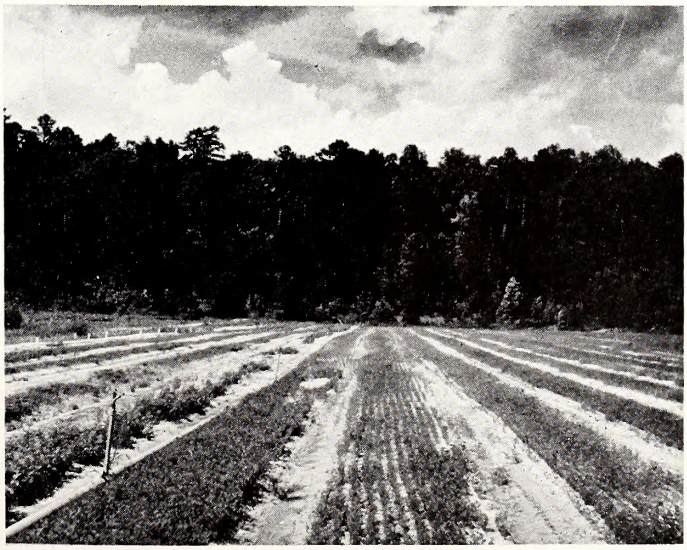
Nursery manager Don Hankla stands hip-deep in a field of sericea lespedeza, from which seeds will be gathered for future use in establishing farm game cover strips which are planted adjacent to the bicolor food borders.

Hankla examines a test planting in the experimental field. When a new variety appears, it is propagated at the nursery to determine its suitability for North Carolina, and how well the quail seem to like it.



Seeds and seedlings are processed in two buildings at the nursery. During the fall and winter millions of plants will pass through these buildings on their way to farmers and other landowners.

One of the most important crops of the nursery, bicolor lespedeza is shown above in the seedling stage. The nursery, a game refuge, abounds in quail that have learned that food and cover are always available to them here. Below, an experimental field, irrigated from a near-by stream, contains rod rows of many new and promising species, and sample plots using new methods of production.



THE WATER PROBLEM

How to Get It Where It Isn't

Reprinted by permission from TIME Magazine; Copyright Time, Inc. 1955

The most plentiful natural resource in the U. S. is water. Some 1.5 quadrillion gallons annually fall on the nation, enough to fill a lake as big as the state of California and 50 ft. deep. But in many sections of the U. S. a serious water shortage exists or is developing. The real problem is one of distribution—how to get the water where it isn't. Shortages crop up because a growing population and a rising standard of living (e.g., 35 million bathrooms now v. about 13 million in 1930) are multiplying the demand faster than the U. S. is learning how to use its supply. For every one of its 165 million people, the U. S. uses an average of about 1,500 gallons of water every day (v. 600 gallons of water in 1900). All told, the nation consumes 231 billion gallons daily, more than enough to float the combined merchant fleets of the entire world; by 1975 consumption will soar to 402 billion gallons a day. One of the nation's top water experts, Army Engineers Chief Samuel Sturgis Jr., warns that the U. S. had better head off a shortage without further delay.

The shortage has already taken hold in Texas, where population jumped 130% between 1890 and 1950, and water consumption an astonishing 13,500%. What this means is that today's Texan uses 135 times as much water as his grandfather, and some parts of the state are draining their reserves. Houston, for example is pumping from wells so fast that the land is actually sinking, from six inches in the business district to more than three feet in suburban Pasadena. Though enough rain falls on Texas every year to cover the entire state to a depth of 30 inches, man uses only a small part of this flood. Such worthless plant life as mesquite and catclaw absorbs 35% of the rainfall, and another 40% is lost to evaporation. Of the total precipitation, Texans are left with little—about 3% for pasture grass, timber, crops, etc., another 3% that seeps to underground reservoirs.

In all the U. S. the biggest single consumer of water is irrigation, which has spread from a few thousand western acres in 1850 to some 30 million acres, sprawled over such eastern and southern states as Delaware, Rhode Island, Mississippi. To grow a bushel of corn by irrigation requires about 10,000 gallons of water; to grow a ton of alfalfa hay, about 200,000 gallons. At present irrigation soaks up about 100 billion gallons of water daily, almost half the water withdrawn by the entire nation.

Nobody is more concerned about water than U. S. industry, which already uses about 80 billion gallons daily, will siphon off 200 billion gallons daily (exclusive of water power) by 1975. Whatever the product, the choice of any plant site often depends on how much fresh water is available. After World War II, for example, General Motors wanted to take over a Lima (Ohio) plant that it had operated for the Government, but backed out because it could not get a guarantee of future water supplies. Ford Motor Co. built a huge new plant at Walton Hills, outside Cleveland, but only after the city agreed to extend its water mains. If Denver cannot find more water, its industrial growth must grind to a halt by 1963.

As scarcities loom, many a company learns to conserve water. By using, cooling and re-using water until it completely evaporates, Kaiser Steel Corp.'s Fontana, Calif. plant consumes only 1,100 gallons of water per ton of steel v. the industry average of 65,000 gallons per ton. Bethlehem Steel Corp.'s Sparrows Point (Md.) plant found a cheap water supply in the treated effluence of Baltimore's municipal sewage. Though the initial equipment cost is higher, some companies are shifting to salt water for cooling.

Every water expert knows that there is no quick and simple way to avert the threat of shortages. One proposed remedy is the regional water commission of nonpolitical experts to tackle the problem for an entire valley or watershed; such commissions are in operation in Boston, Los Angeles, suburban Washington. To plug two big leaks, the Government is pressing farmers to replace open irrigation ditches with more efficient concrete pipe, industry to conserve water by re-using supplies.

The U. S. House of Representatives has passed a $6,000,000 appropriation to develop a low-cost method of converting sea water, thus provide thirsty cities, Los Angeles, Houston, New York and others, with unlimited supplies; it is considering a bill to authorize long-term, interest-free loans (up to $5,000,000) to local groups that want to build small dams. But Congress has left the Army Engineers with an $8.5 billion backlog of flood-control and water-storage projects. Only last week the House Appropriations Committee slashed $48 million from President Eisenhower's $512 million budget for water projects next year. The price of water conservation may seem high, but the cost of water shortage is even higher.

State of North Carolina

Wildlife Resources Commission

RALEIGH, N. C.

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September, 1955

Dear Teacher,

IT IS HERE! Written especially for you--A GUIDE FOR TEACHING WILDLIFE CONSERVATION.

In it, you will find facts and information on wildlife resources of North Carolina, the reasons for teaching wildlife conservation and many ways in which the subject may be presented and studied.

You are the most invaluable employee in North Carolina because you are investing your time and interest in youth--the only permanent investment anyone can make. One of the most important subjects you can teach is conservation of our natural renewable resources--soil, water, forests, and wildlife--because our continued existence will depend upon them and the wise way in which they are used.

How about beginning your teaching with a unit on wildlife conservation? Write today for your FREE copy of A GUIDE FOR TEACHING WILDLIFE CONSERVATION. We are eager for you to have it.

Sincerely yours,

Lunette Barber

Lunette Barber

1955 WINNERS

Wildlife Essay Contest

Writing on the subject "The Economic Value of Wildlife in My Community" three North Carolina Students won prizes in the contest sponsored by the Academy of Sciences, the Wildlife Commission, and the N. C. Wildlife Federation.

FIRST PLACE WINNER $100 PRIZE

by Jean Owens
Lumberton High School
Lumberton, North Carolina
Age 15 Grade 10
Teacher: Adelaide Bullard

The dark, lazy waters of the Lumber River, its many tributaries and the swampy terrain throughout Robeson County afford ideal habitat for wildlife. Much is being done to improve our environmental conditions for game and fish. They have been taken for granted too long. Just recently the people have been awakened to the economic value of wildlife here.

Robeson County as a whole is a good small game area and has great possibilities of development for big game animals in some sections. Our deer population has diminished until at the present we are stocking them at a rate of thirty or more each year. The season for them will be closed until 1957. The rabbit, squirrel, fox and raccoon are plentiful and we want it to stay that way. Too many people depend directly upon them for part or all of their salary to let the wildlife resources disappear.

The wildlife business pays a tremendous sum in taxes each year. The fines collected from game-law violations are given to the Robeson County school system. Many times a part of the court costs is given to the school, too. Think how this helps in the educational field. Besides these fines and taxes a greater portion of money spent on game and fish goes to the thousands of individuals and businesses who serve the hunter and fisherman. The small fees paid by the sportsman to the Wildlife Commission for his license is only the beginning of his expenses.

Robeson County has several sporting-goods dealers who handle clothing, motors, guns, boats, ammunition, tackle, rods, reels and many other items the hunter and angler needs. Dog breeders, game breeders, kennels, dog food companies and veterinarians all get their share of the sportsman's money. And now, his traveling expense—filling stations, oil companies and garages—restaurants, tourist homes and motels accommodate those who vacation for field sports in our hunting grounds. Each year tourists come from far and near to engage in quail hunting. Tired business men from New York, and other states as well come and spend weeks here during the open season for quail. Others enjoy fishing for our famous red breast. Many of these sportsmen hire guides.

The natural bait business is also a thriving business. It sounds small, but it's surprising how much these dealers net annually. Also sport magazines sell like hot cakes at magazine stands.

In our community we have several commercial fishermen who depend on their catch of non-game fish for a living during the season—January 1st to March 15th.

So many farmers have had private ponds built in this locality that the farm pond contractors have made a good business of it. The farmers' economic gains are numerous. He can, by properly managing the pond, realize an excellent fish crop sale, collect fishing fees and enjoy recreational pleasures right at home. The pond serves to control soil erosion, stock watering, irrigation and fire fighting possibilities. Last, the fish in his pond contribute to the

health of his family and livestock by destroying mosquito larvae, which will breed successfully in ponds if fish are not present.

The Wildlife Commission here has come a long, long way to improve stream conditions and with the cooperation of the sportsmen and farmers, will be able to keep a healthy variety of species in our waters.

Much credit for our vast income through wildlife goes to our three native game birds; quail, wild turkey and mourning dove.

Quail began to thrive in this county when the early Croatan Indian settlers began opening up the rich bottom lands. They have continued to spread and increase right along with agriculture until today with our clean farming methods, "The Meadows," located about five miles from Lumberton, is one of our finest quail areas. This is a poorly drained, open pine woods section where a little "patch-farming" is done. The practice of burning it over annually keeps down the undergrowth and promotes an abundant growth of wild brush lespedeza. This furnishes good cover for the quail and excellent sport for the hunter.

Birds also have an economic value which lies in the service they render in preventing undue increase in insects, in devouring small rodents, and in acting as scavengers. We can't say exactly how much these birds do; but we do know that some birds are capable of destroying ten thousand insects a day. Sparrows, meadow larks, and juncoes eat crabgrass and ragweed which harm crops. Hawks and owls do so much more good than harm that they are beneficial to the economic problem of the agriculture interests. Birds are distributors of seeds through their digestive system. Often bare acres of land have been replaced by them.

When we tabulate the economic values of our birds, is there any wonder that we are encouraging conservation of these lovely, feathered friends.

I feel that we realize a real economy from wildlife through the aesthetic pleasures we receive—daily routine becomes monotonous and our inner self calls for a release. Our emotional stresses increase to the point where relaxation is essential to our health. The simple means of relieving this mental strain by going into the outdoors has cured many ills, thus saving high medical fees.

The basic wealth of my community can be measured neither by bank deposit nor size of industries alone, but by its natural resources. Each year the number of anglers and sportsmen grow greater. Through the Wildlife Commission, fish and game are abundant in our county but if we are to continue to enjoy hunting and fishing and to increase the abundance of fish and game we must all work together to make the conservation program now going on a success. I feel that it will succeed for the economic value of game and fish resources are of major importance to the people of my community —Lumberton and Robeson County.

SECOND PLACE WINNER $75 PRIZE

by Saundra Cordell
Candler High School
Candler, North Carolina
Age 15 Grade 10
Teacher: Mrs. Christine R. Gilmore

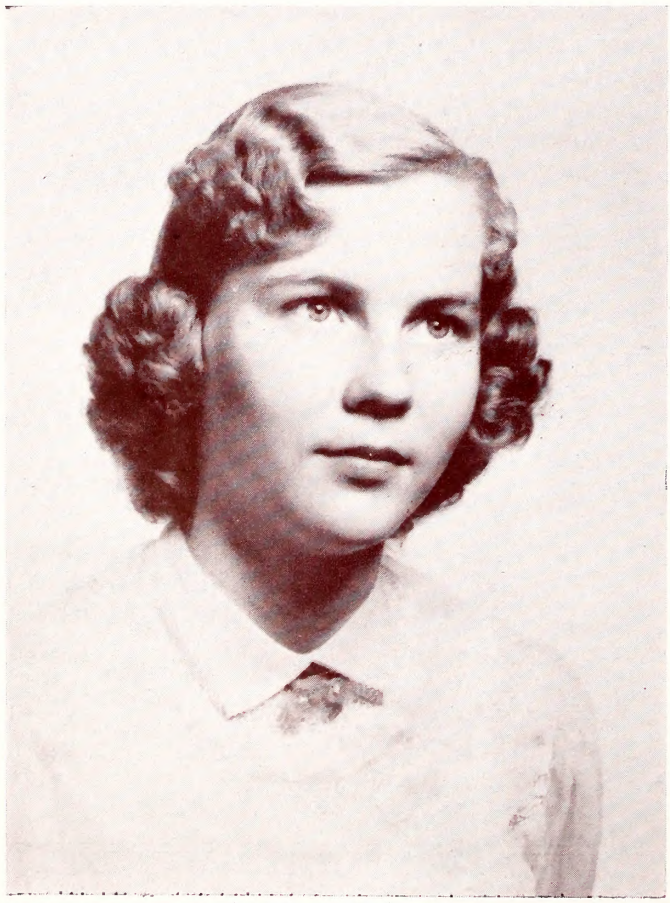
When the pioneers pushed westward over the mountains, wildlife was so plentiful that it was killed needlessly. Therefore, in our mountain area, game became scarce and our government spent much money setting up game preserves to protect the remaining wildlife from extinction. By restocking these preserves from year to year, more game was made available to trappers, hunters, and fishermen, thus bringing in money for the community.

Probably one of the best game protectorates in our community is Pisgah National Forest. It was first established for the protection of vanishing game; but as certain species grew greatly in number, hunters have been allowed to enter this preserve to slightly decrease the number. This of course, brings more profit to the community in selling permits and licenses. Those who cannot resist the temptation of the out-of-season game and those who use illegal methods to catch the game also bring in money for fines.

Today we enjoy the benefits of hunting, fishing, and trapping in our community because of the efforts of our government in setting up these game preserves. Although not much commercial fishing, hunting or trapping is carried on in our community, there are remunerations. Bear hunting is becoming popular in Buncombe County; and for a set fee, a large party can be organized to hunt in the national forest. Many times when the hunter comes back with a bear, deer or even small game, he can use them to supplement his food supply and thus save on his grocery bill. Also, in a few sections of our community there are coveys of quail and grouse which hunters are permitted to shoot in season. As the birds make a savory meal, they are quite sought after.

Trout fishing is one of the most popular sports in our mountain section. There are large numbers of local fisherman and many tourists who pay a reasonable fee for fishing in our streams. Although these streams are heavily fished, there is usually a fairly abundant supply of fish because the state's largest fish hatchery is located near our community and plenty of fish are available for restocking.

THIRD PRIZE WINNER - $50 PRIZE



by Mayme Roberson
Candler High School
Candler, North Carolina
Age 15 Grade 10
Teacher: Mrs. Christine R. Gilmore

Because of the vast areas of land in my community which have been cleared for farming, the wildlife population has steadily decreased in recent years. The government in 1932, seeing the need for preserving diminishing wildlife, established the Pisgah National Forest and Game Reserve. Although Pisgah was founded mainly for wildlife protection, it has also become of great economic value to this section by providing a suitable habitat and good hunting grounds for deer, bear, squirrel, and raccoon. For example, the receipts from special permits of the 1953 season in the five areas of the Pisgah National Forest and Game Reserve are as follows:

Daniel Boone Area	$ 7,393.00
Mount Mitchell Area	3,655.50
Pisgah Area	17,622.50
Rich Laurel Area	1,815.00
Sherwood Forest Area	6,444.00
TOTAL	$36,930.00

This money is not a profit, but is returned to the hunter in various methods.

Deer hunting, which begins in early autumn, is a favorite sport of many. For a one day hunt with the limit of one buck deer the charge is $2.50 for residents and $5.00 for non-residents. However, hunting on the period basis is also permitted if one files an application in advance. The charge for period hunts is $7.50 for residents and $15.00 for non-residents. This money is used for restocking purposes, for providing better habitats, and for studying fatal diseases; thus furnishing deer for future hunters. Food is obtained from the deer, and mounted deer heads are of priceless importance to many hunters.

Another sport in which many mountaineers participate is bear hunting. If one hunts bear on managed areas, the charge is $50.00 per party of not more than twenty-five men. This money is used for restocking and for protecting the bear popula-

Several artificial lakes have been built in and near our community and stocked with fish. Lake fishing has become quite popular with both local and out-of-state fishermen; and cabins, boats, motors, and fishing tackle can be rented or sold. In addition, many private ponds have been started and are usually stocked from the local hatchery. People of the community who own one of these ponds can make a nice profit by allowing people to fish there for a minimum charge.

As for trapping in our community, very little is carried on and this is entirely unorganized. Muskrat, raccoon, mink, otter, and fox furs are the chief kinds of pelts taken.

Birdlife is invaluable to our farmers due to the fact that a great number of these birds kill many crop-destroying insects and rodents. A good example of this is the night-flying owl which catches rats and mice. A few of the smaller birds might cause a little damage when the fruit crop is being gathered, but in general most of these birds add beauty and dignity to our community.

Another aspect of this "economic value" is the fact that a great number of tourists are attracted to these mountains simply because they would like to catch a glimpse of a deer or a black bear roaming along the roads. A few places of business use caged animals native to our community to attract more trade.

Our wildlife, being one of our most important resources and of much economic value to our community, should be conserved just as some valuable mineral would be so that our supply will not be exhausted. As we prepare for the future now, we must protect our diminishing wildlife.

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tion. However, most hunts are held on land which is not supervised. The meat of the bear is eatable, but the skin and fur are the most valuable parts of it.

Squirrels are very numerous in this section of the state. The daily fee for a license for hunting squirrels in managed areas is $1.00 for residents and $2.00 for non-residents. Still, this money in being used for the benefit of the squirrel is returned to the hunters. Although the squirrel is of comparatively little economic value, its meat can be eaten and the fur is sometimes used.

A familiar sight in the mountains is to see someone going "Coon hunting" with a gun on his shoulder and several dogs running ahead of him. The fur of the raccoon is very valuable; therefore, many farmers in this area supplement their annual income by killing these animals. Also, the meat is very tasty. Hunting raccoon on areas that are managed cost $5.00 for residents and $10.00 for non-residents.

The rabbit is one of the favorite game animals in this locality. Its meat is very good, and its pelt and fur are of great value since new methods have been discovered for preparing rabbit fur to look like other more expensive furs such as beaver, ermine, and chinchilla.

The most popular game bird in my community is the grouse, which is sometimes called the "king of the game birds." The meat of this bird is very delicious to eat and sometimes the bird is stuffed by a taxidermist and sold to an ardent admirer.

A few quail and wild turkeys are found here, but because of the destruction of their natural habitats, they are slowly becoming extinct. These birds are also used for food.

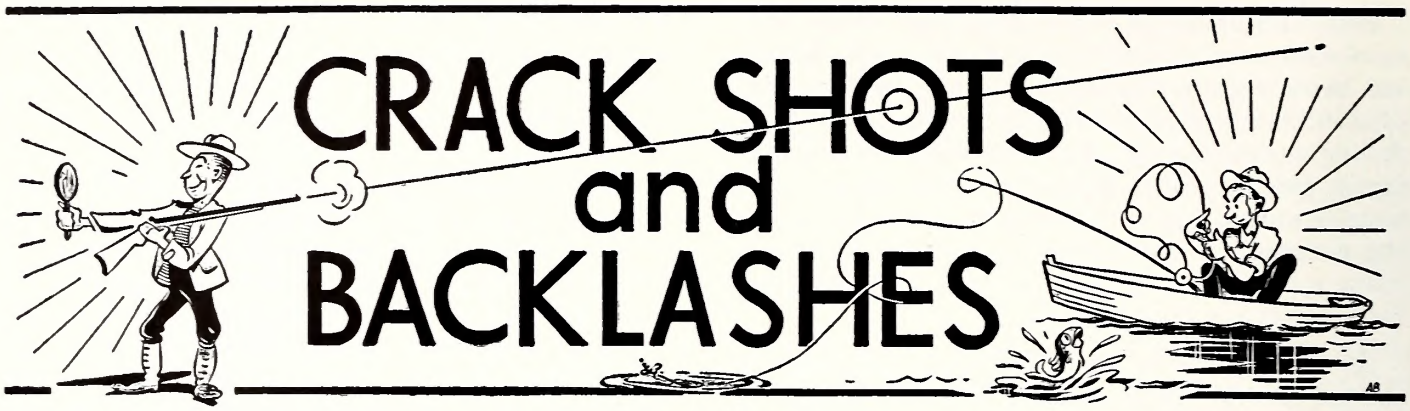
The animal of the most economic value in this area is the muskrat. This little fur-bearing animal is trapped by numerous residents who make hundreds of dollars each year selling the muskrat pelts. The climate, water, and terrain here are excellent for these animals. Food for them is also plentiful. There is no immediate danger of their becoming extinct.

Other fur-bearing animals found in this section are skunks, weasels, opposums, minks, and foxes. However, these are found only in very small quantities and are of very little economic value to this community.

Fish, especially trout, are abundant in the mountain streams and lakes of this area. Fishing is enjoyed by almost everyone who lives here. A license is necessary to fish, but the money paid by the fisher is returned to him in the restocking of the lakes and streams. These fish when caught are usually eaten by the catcher.

Each year hundreds of dollars are made by individuals of this community from the catching or killing of wildlife. The North Carolina Wildlife Resources Commission and many residents of this section have seen the importance of our wildlife and have taken measures to protect it. But, if the local citizens are to continue to have an abundant supply of wildlife and other natural resources, they must obey this conservation pledge:

"We give our pledge as Americans to save and faithfully to defend from waste the natural resources of our country—its soil and minerals, its forests, waters, and wildlife."



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

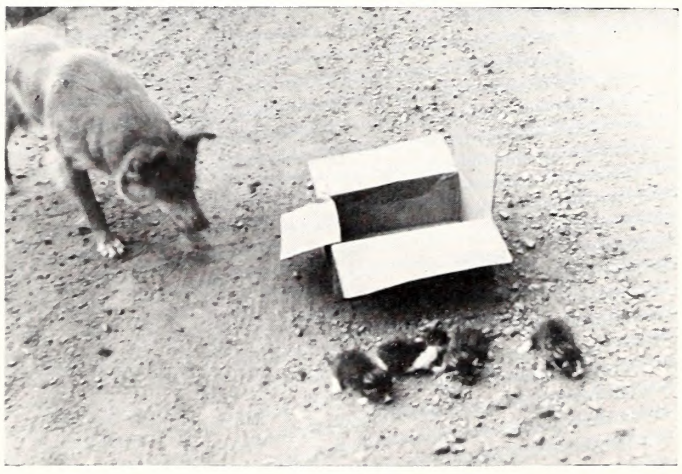
We'll start off this month with a definite backlash. Mrs. M. J. Simer of Oklahoma writes:

"Being a former resident of North Carolina and a native daughter, we thoroughly enjoy WILDLIFE IN NORTH CAROLINA (no backlash there—Ed.). But please note your spelling of Oklahoma on our address label (Oaklahoma. Tsk! Tsk!)"

Oakey doaky, we'll spell it Oky next time.

"Dear Sir:

"On July 6, 1955, I was coming out of my back door when I happened to look down the road by my house when I saw a 50 model Studebaker truck stop and kick out a small box, my curiosity got the best of me so I went down to take a look; not to my surprise I found that the box contained four kittens. I was so mad I didn't know what to do, then I happened to think that you might want the picture and the story on this destructive act. You may have the right to print this in your magazine,



of which I have been a subscriber. Please find enclosed three pictures of proof that you also may print.

"Congratulations on a fine magazine, from a fellow who has some day, aspirations of becoming a game protector.

Yours very truly,
Walter H. Simpson
Reidsville, N. C."

Many thanks to Mr. Simpson for sending this along. It points up an activity we have been preaching against for a long time.

"Dear Sir:

"I have just read with great interest in the June issue of your fine magazine Frank Hancock's plea that skin diving be officially supported in all inland as well as brackish and salt waters of your state, as well as your request for comments by readers.

"I am no skin diver myself as I cannot swim a stroke. However, through The Aquarists' Internationale Society and other means I keep in contact with a great number of devotees of this fascinating sport around the globe, some of them even being members of the Ancient and Honorable Order of Frogmen. Moreover, having been skunked innumerable times throughout this country, eastern Canada, Britain, Holland, Belgium and all over the Union of South Africa, I think I know a little about fishes, although I am not an "expert." May the grace of Allah save me from the company of anyone who frankly admits that he knows everything about anything. In my rarely humble opinion the greatest mark of intelligence is for a man or woman to say, at least occasionally: "I'll be darned if I know. I'll try to find out and pass it along to you later."

"Most of the opposition to skin diving, and a good deal of it is springing up lately, obviously comes from people who don't know anything about the subject and are too lazy to find out. They are agin it either because they were just naturally born with chips on their shoulders or else they howl about it in order to distract attention from some profitable little racket of their own. At least I trust that one can be frank in your publication. In the long run you get exactly nowhere by being anything else.

"The skin diver's interests do not lie in the killing of fishes. Mostly he or she wants to study the living beauty of the strange submarine world which only recently has been opened a little way to the fairly ordinary human for the first time. Occasionally he may try to kill a few specimens, either some very oddball rarity or a supersized fish which is mostly well past its best reproductive age anyhow. But with the greatest skill and even the most costly equipment this takes a lot of doing. Generally speaking it will take the average skin diver a long day of hard work at the cost of plenty of dollars to bag two or three fishes. Because of which he is not going to mess around with cigar-sized trout or juvenile bass which occupy most of the bag of the terrestrial "sportsman," who, in most instances, is about as sporting as a ferret.

"All the skin divers now operating in the world, even if placed lengthwise around the equator and supplied with free beer and hamburgers could not—even if they wanted to, which they don't—kill as many fishes in a fortnight as one of our great modern draggers, ever increasing in largely uncontrolled efficiency, will slaughter in a few hours of wrecking natural feeding grounds, tearing up spawning beds and slaughtering vast numbers of fishes too small to be used for anything but canned cat-food, fertilizer or glue. The once vast wealth of the seas around us and of the lakes and streams about us are very

swiftly being destroyed past recovery by uncontrolled commercial fishing operations. Second only to this destruction, if it actually is not equal to it, is the all-too-similarily destructive effects of the daily kilo-tonnage of poisonous industrial and social wastes which we pour into our rivers, estuaries and seas. Some day quite soon, inevitably, the waters will throw all this rot back at us, either directly into our stupid, smirking faces or by the complete extinction of many of our most essential sources of nourishment and medical supplies. This cannot keep up much longer. Even today I can personally cite to you a great many spots between Cape Fear and False Bay, Zululand, in either direction, which only twenty years or so ago were swarming with vigorous life but are now reduced to little more than liquid deserts. And all the time various crackpots yelp about the microscopic number of fishes which may be taken by the skin-divers. Efforts are now being made by commercial fishing interests and the operators of swank "sport" fishing boats in Florida to ban in that state not only the use but even the possession of subaquatic spear-gun equipment. This move has all the merits as would one by the manufacturers of our criminally overpowered motorcars to ban the roller skate as dangerous to life and limb. It's unadultered hogwash; but I bet you they'll get away with it. You can check on this little item with "The Deep Sea Digest," P. O. Box 333, South Miami: "The Biggest Little Magazine in the World," which is trying hard to bust it up.

"Of the thousands of specific examples which come to my mind I shall refer to only two. Seven years ago I came out here to an area which fifteen years ago was one of the finest fishing spots in the United States. Even when I arrived it was pretty good, with a fair variety of different inshore marine fishes in good quantity. But now there is almost nothing in the water but sewage and the constantly dripping waste from beach-front oil wells. All the larger fishes have disappeared because this filth has killed off all their feed. When I arrived you had to pay a quarter for a quart of big, fat, locally-dug razorclams for bait. Now they are asking 85¢ for the same quantity of tiny, broken-up razorclams shipped up from San Diego or even from Mexico.

"Last summer I stopped in briefly at Tockport, Massachusetts, after having found nothing but pencil-eels in Ike Walton's old Peterborough River—now The Nene—in Northamptonshire, England. Twenty-five years ago I used to be able to push a dory off the front beach at Rockport and load up with horse-sized haddock and other good food fishes. This time I went into a fish market on Bear Skin Neck and saw a summer visitor pay $1.65 for a haddock so small that I would have been ashamed to bring it home for any self-respecting cat.

"If we give her even half a chance Nature will quickly return her production to normal, or very near it; but without some quite positive help from us the old lady cannot do the job alone. We have simply got to remember, or to learn for the first time, that there is a very intricate, subtle balance of nature which, once knocked even slightly out of whack, tears up the whole works. Whether we can see it right before our noses or not every living creature depends in some way for its welfare upon the welfare of some other living creature; although to the casual onlooker there may be hundreds of miles between them. The poisoning of a stream at Point X may in a few months have a destructive effect upon a highly valuable fishery at Point Z as much as a thousand miles away. And how much are the skin divers to blame for such tragic situations? Not at all. For the most part they are the ones who best appreciate the mess we have poured around our own feet and are the first to try to do something about it. Because to really know what is going on in the water you have got to get down there and look at it, for yourself—if your stomach is strong enough to take the sight of what sheer ignorance and laziness is doing everywhere from the south coast of Tasmania to the top tip of Greenland.

Sincerely,
Henry A. Nichols
Santa Ana, California"

"Dear Sir:

"I run a barber shop out in the country. We have lots of mockingbirds. One day I saw one flying with something and shortly he dropped it. On checking I found it was a day-old rabbit.

Yours very truly,
J. L. Peigler
Concord, N. C."

WILDLIFE is always grateful for field notes and observations of this type. Let's have more of the same!

"Dear Sir:

"After spending a week in Myrtle Beach I wonder if you could furnish quotations on necessary amount of fish to restock Atlantic Ocean in this area. Your reply will be referred to Chamber of Commerce of Myrtle Beach.

Very truly yours,
Marshall Mathery"
Myrtle Beach, S. C.

Sorry to hear Mr. Mathery was disappointed in Myrtle Beach fishing. Maybe some of the rockfish we stock in North Carolina waters will stray down that way. No complaints, by the way, about fishing along Tar Heel beaches.

FISHING TIME

by E. P. Holmes

"You can talk of hunters cunnin'
And the many sports of gunnin'
And there is a bit of pleasure
In the pastime I've no doubt
But for good and wholesome
pleasure
There is nothing that will measure
With the river bank when mountain trout
are out.

So he takes it where the dashin'
Little streamlet comes a-splashin'
He settles back and takes a chew
He does a lot of watchful waitin'
And a lot of hesitatin'
What he catches may be mighty
small and few.

When the evenin' shades are fallin'
And the whip-poor-wills are callin'
You will see him creepin' homeward
Spirits gay
He'll tell you how he strung 'em
With a lot of big ones among 'em
But somehow the big 'uns
Always got away."

"Dear Sir:

"I am writing you for some information in regards to a private fish pond.

"This pond consists of approximately two acres of water. During dry weather no water runs out of this pond at all, and this has been the case during the past year and a half. I would like for you to advise me if it is wise to put one hundred pounds of dry loaf bread in this pond once a week for the fish to feed on. I have heard this question discussed pro and con, and would like to know the truth about it.

Yours very truly,
Dr. G. L. Overman
Goldsboro, N. C."

"Dear Dr. Overman:

"Your recent letter to our Mr. Amundson has been referred to this Division for reply.

"In answer to your question concerning the possible necessity of feeding dry loaf bread in your farm pond, we can definitely state that this is not necessary. If your pond is properly fertilized and otherwise managed for bass and bream fishing, no artificial feeding is required. Dry loaf bread is a very poor fish food, and is usually used to attract fish close to shore or boat dock to observe their feeding.

Very truly yours,
R. F. Stephens
Federal Aid Coordinator"

"Dear Sir:

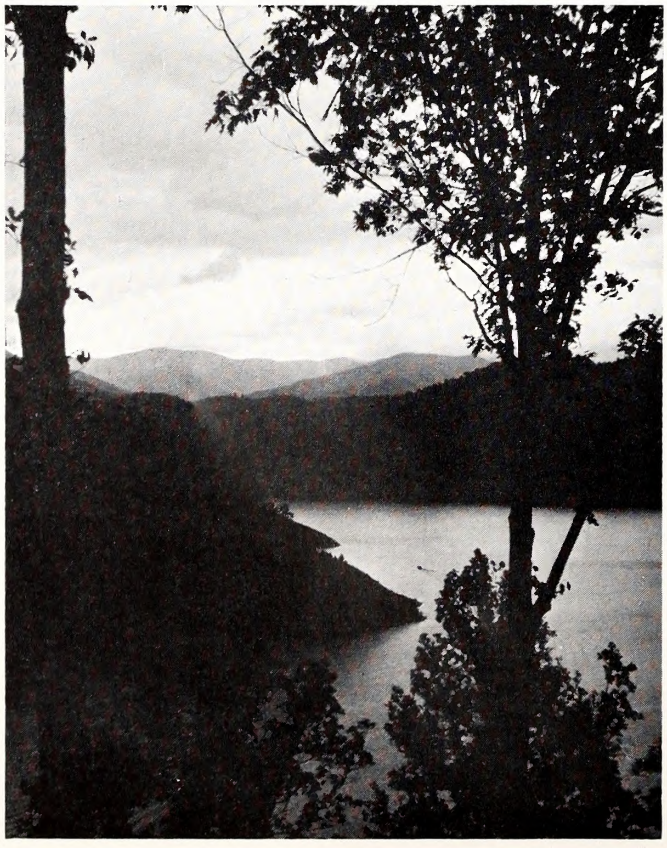
"Enclosed is $1.00 for a two-year subscription for your interesting magazine for me and my son. After reading a couple of issues, I feel sure we will enjoy two-years of stories, current data, and best outdoor activities in our neighbor state North Carolina.

Yours very truly,
Albert C. Littlejohn
Jonesville, S. C."

Thanks, neighbor!

PROTECTOR OF THE MONTH

George A. Barr



PEOPLE AND PLACES

Clouds hanging over Lake Fontana (left) promise more water for the huge reservoir, home of many huge bass and catfish. WILDLIFE's roving camera caught this scene from the new road to Fontana Dam from Asheville and other areas to the east.

This sign at the Grassy Creek Access Area in Granville County marks the entrance to one of many areas which the fisherman is welcome to use. Three new areas, opened since May 1, (see May WILDLIFE) are two on Lake James in Burke County and one on South River in Bladen County.

Widely known throughout the Piedmont and northwestern part of North Carolina, George Barr was born at King in Stokes County on August 2, 1912, and has lived there all his life. At 43 he is still very active in apprehending game and fish law violators over a wide area. First employed on July 1, 1944, by the Division of Game and Inland Fisheries of the Department of Conservation and Development, George decided to remain with the Wildlife Resources Commission when it was created in 1947. A graduate of King High School, where he earned letters in baseball, basketball and track, he has completed two courses in law enforcement at the University of North Carolina Institute of Government.

"My most valuable experience," George says, "has come from eight years in the tobacco warehouse trade, six years as a deputy sheriff, and eleven years as a wildlife protector." He is married and has seven children ranging in age from 10 to 22, and all are attending school or college. He attends the Missionary Baptist Church. George has taken an active interest in the Commission's program, and has been instrumental in the organization and functions of two wildlife clubs in Stokes County.

IT'S THE LAW!

Question: Is it necessary for a person to have his fishing license in his possession while fishing as long as he owns a current license?

Answer: A fishing license must be kept on the person of anyone fishing in waters where he is required to have a license. According to law, he must show the license to any official charged with the responsibility of enforcing the fishing regulations.

ENFORCEMENT RECORD FOR JUNE

The following is a tabulation of the enforcement activities of the Wildlife Protection Division for the month of June, 1955:

Persons checked	49,231
Total prosecutions	710
Total convictions	695
Cases not guilty	8
Cases nol prossed	7
Cases in which no fine was levied	168
Cases in which the fine was suspended	217
Cases appealed	11

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs are paid to the Wildlife Commission or its personnel.

OUTLOOK from page 5

the state. Rabbit populations have been improved where farm game habitat projects are in operation. The demand for rabbits by hunters has always been strong. The cottontail has long been the most popular game animal, here and in other states. Another factor affecting the rabbit supply is a law which permits rabbits to be trapped throughout the year and sold for food.

Quail: Reports vary as to the available supply of quail this fall. Cold spring weather had a detrimental affect on the nesting in some localities, but in general it appears that the quail supply will be about the same as for the past several seasons. Any increase in the quail population can generally be credited to farmers and game managers who have been carrying on quail habitat restoration projects.

The supply of quail will always depend directly on the amount of suitable quail habitat. An increase in good quail cover means an almost automatic increase in birds. Hunters will probably again experience some difficulty in harvesting birds, even in areas where cover and food are abundant. This will be due to an apparently growing habit of the birds getting their daily food quickly and returning to thickets where they are difficult to locate and shoot.

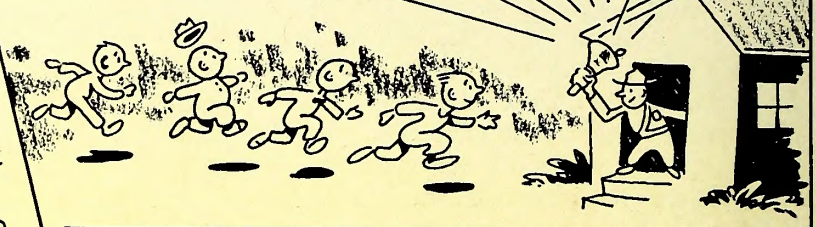
Wild Turkey: Although this majestic game bird seems to continue to hold its own through the range, it will be nowhere abundant in North Carolina during the coming season. An exacting sport, turkey hunting is done generally by men who know how to locate gangs and call them in to the blind successfully. There will be local increases and decreases, with the total population about the same as last year.

Ruffed Grouse: Confined to the mountainous section of the state, the ruffed grouse is one of our most important game birds. Because of the difficulty and ruggedness of the sport of grouse hunting, relatively few hunters try for grouse, and each year the harvestable supply of birds exceeds the demand. The past nesting season was for the most part successful, and the supply of these tricky targets should be more than adequate.

General: Tar Heel hunters may approach the 1955-1956 season with optimism. Despite a growing number of hunters and an ever-shrinking habitat, the Tar Heel state can boast of some of the longest seasons, most liberal bag limits and greatest variety of sport to be found anywhere in the country. At the same time they should remember that this sport will be available only so long as a progressive wildlife management program is carried on—*with their active cooperation!* Good sportsmanship requires observance of the rules of safety and courtesy as well as the rules which control the harvest so that each will have an equal opportunity to enjoy our wildlife heritage.

SCHOOL FOR THE GAME PROTECTOR

ONCE EACH YEAR NORTH CAROLINA PROVIDES AN INTENSIVE COURSE OF INSTRUCTION FOR PROSPECTIVE GAME PROTECTORS. FROM THE 100 BEST APPLICATIONS TWENTY MEN ARE SELECTED TO ATTEND THE COURSE AT THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL. ONLY ONE OTHER STATE OFFERS SUCH TRAINING —



THE MEN ATTEND CLASSES IN — LAW
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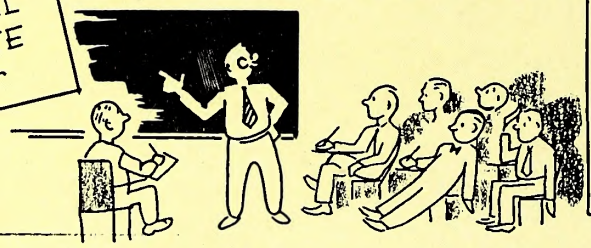
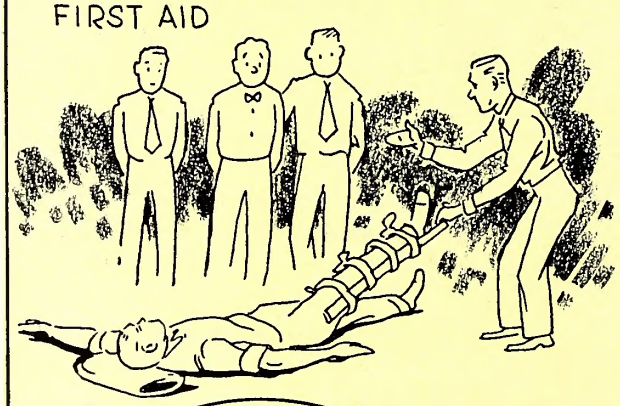
HEALTH
PUBLIC RELATIONS
ETC.

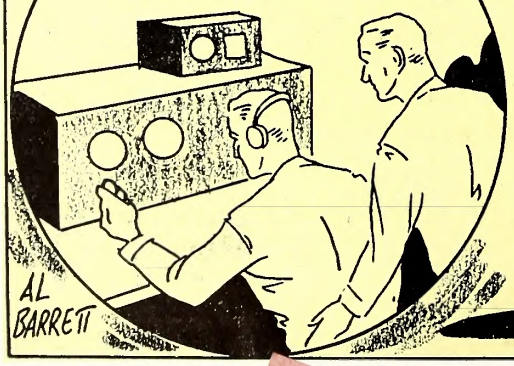


THEY LEARN FIRST AID

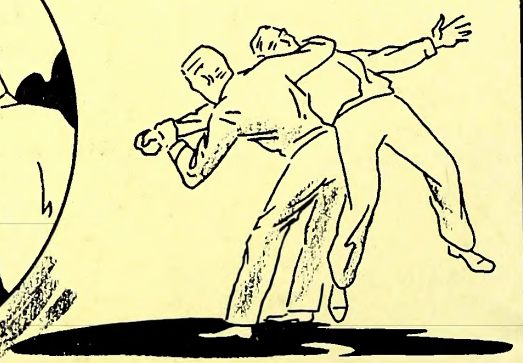


MARKSMANSHIP

— RADIO OPERATION



— AND JUDO



CERTIFICATES AWARDED ON COMPLETION OF THE COURSE ARE HIGHLY VALUED BY THE MEN — AND MEAN MUCH TO THE STATE IN HELPING TO IMPROVE THIS SERVICE.

AL BARRETT

THE GRAPHIC PRESS, INC., RALEIGH, N. C.

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Wildlife

OCTOBER - 1955

TEN CENTS

in north carolina

Photo by Jack Dermid

TROPHY

Hunters will harvest many fine bucks from Tar Heel woodlands during the coming season. To insure the future of deer hunting and to increase the opportunity for all hunters, the Wildlife Resources Commission has a long-range deer management and restoration program operating in all areas of the State with suitable range.

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

LUTHER H. HODGES
Governor

North Carolina Wildlife Resources Commission

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COVER

The Wood Thrush, or "Quillaree," is a favorite warm-weather resident of North Carolina, but he disappears in mid-October, preferring to spend his winters in Central America. Watercolor by Richard A. Parks.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

• • •

Entered as second class matter at the Post Office at Raleigh, North Carolina, February 23, 1948, under the act of August 24, 1912.

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Careers in Conservation III

THE JOB OF SOIL CONSERVATION

by Earl B. Garrett

State Soil Conservationist

Earl B. Garrett

To conserve and rebuild our natural resources is the most exciting and challenging problem in agriculture today.

These resources include soil, water, wildlife, fish, forests, and minerals. To preserve them and renew them is to restore the natural beauty of our streams and forests and the productivity of our farmsteads.

The principal positions today in the conservation of our natural resources are in (1) Government service, and (2) private business. Within these two fields of employment will be found such jobs as those of the biologist, the forest ranger, the plant technologist, the soil scientist, the agricultural engineer, the soil conservationist, the agronomist, and others.

The need for these technicians is great. We now have all the land that we shall ever have; yet our population is increasing at a rapid rate. Vast areas of some of our most productive land are being taken over for industrial, urban, and highway development. Furthermore, in North Carolina, as has happened elsewhere, we have lost an alarming amount of our fertile soil to erosion. Our loss in this state through mismanagement and indifferent farming practices is approximately one-fifth of our farm land.

What is Soil Conservation?

Soil conservation is the proper use and care of the land. It means using the land to produce the greatest amounts of the things we need and, at the same time, protecting the land so it will not lose its productiveness. Soil conservation is one of the youngest of the agricultural sciences and one of the most exacting. Real, permanent conservation must be well planned and executed in accordance with sound scientific principles. On the other hand, it must be reduced to simple, practical terms and methods so that the farmers who work the land may understand it and use it as a part of their everyday operations.

Effective control of erosion and conservation of water require the use and treatment of each class of land according to its needs and capabilities. It is probably safe to say that no two parcels of land are exactly alike. Each small field or pasture is likely to be different from other fields either in soil type, slope, kind and degree of erosion, past use, or location with respect to other lands. Hence, each field—even each important part of a field, pasture, or woodlot—requires its own particular conservation treatment. Each acre should be used for things it is best suited to do, and each acre should be protected according to its needs.

All measures that help to keep the land productive are tools of conservation. Terraces, contouring, strip cropping, organic matter, grass, legumes, trees, shrubs, crop rotations, fertilizers, drainage, and irrigation—all of these and whatever else is needed—are tools of conservation. It is conservation whether these tools are used singly or in combination, one supplementing another. In other words, soil conservation includes any and all measures which will make the land produce more and, at the same time, preserve it for future use.

Scientific soil conservation, as practiced by trained conservationists, is the cheapest and most effective way of protecting land from destructive erosion and is also one of the best ways of increasing the productivity of the land. Proper conservation farming practically always results in increased yields

per acre. It causes greater diversification and a more stable income for those farmers who practice it. And it assures a more stable and prosperous community, state, and nation.

Moreover, soil and water conservation on farm lands helps to control floods and prevents excessive siltation of our streams, harbors, and reservoirs. It also improves conditions for fish and wildlife and adds to our recreational facilities.

What is the Job of a Soil Conservationist?

A soil conservationist is a special kind of technician with skills in many related agricultural fields. His principal job is to work with farmers who cooperate with soil conservation districts. He helps them to analyze their farming and land use problems and works out with them ways and means of planning and installing soil and water conservation practices that will conserve their soil and moisture and provide a profitable operation of the farm enterprise. He must be able to deal effectively with rural people both individually and in groups.

A farm planner must thoroughly understand the farming as a business enterprise in the area in which he is working. He must also be able to interpret from maps such physical information about the land as the kind of soil, degree of erosion, slope, degree of wetness and the condition of pasture, and other land use information so that the capability of the land for continuous production without impairment can be determined. He must understand the action of wind and water and their effect on land and crops. By bringing together the information from many technical fields he can then assist the farmer to prepare a conservation farm plan that will be both practical and profitable.

The Soil Conservation Service has found both need and opportunity to apply certain biology sciences to soil and water management. This has included farm waters for fish, wild ducks, wild geese, muskrats, mink, and nutria; land management for farm game such as quail, rabbits and squirrels in the South—also pheasants in northern states; and the establishment of winter grazing for deer, wild turkeys and geese. The production of game and fish on agricultural lands has economic promise as well as home recreation for farm people. Soil Conservation District leaders now accept game and fish management as agricultural responsibilities in their conservation programs.

In addition the biological problems include water and soil management to avoid troublesome water weeds, destructive insects, and unwanted animals such as rodents.

The career soil conservationist is able to acquire working knowledge of uncomplicated game and fish techniques. He helps landowners plan these improvements, but is not required to become a game or fisheries specialist.

More complicated and more intensive wildlife and fish management is desired by some land owners, who need the services of an experienced soil conservation biologist. The SCS employs only a few biology specialists to serve this need in land use, but the demand increases. More farmers are interested in fish farming which now includes various kinds of fish and water management—fishponds for bass and bluegill fishing, cold water ponds for trout, bait-minnow farms, and foodfish farming which produces crops of catfish, buffalo, or carp. Happily, too, more dependable technologies are developing to make land produce better crops of birds and mammals on American farm lands.

Although Soil Conservation is not offered as a specific course of study, any good college of agriculture can provide training in this field. Frequently promising students are given temporary summer employment between school years, so that on graduation these students will have had nine

North Carolina's farms and farm people have benefitted tremendously from the efforts of Soil Conservation Service representatives to encourage the building of farm ponds. Two multiflora rose fences in this picture show results of the SCS's pioneer work in wildlife plantings.

Soil Conservation Service Photo

months practical field experience. Student counsellors can give excellent advice on which courses to study in preparation for a soil conservation career.

What Training Does a Soil Conservationist Need?

Ideally, the best training a man could have for work as a soil conservationist, and particularly as a farm planner, would be education and experience which would give him a good working knowledge of farming as a business enterprise. This would include soil management, crops, and livestock, plus a knowledge of farm woodland, pasture, and wildlife management problems. In addition, he would need enough engineering training to understand the movement, action, and control of water under various conditions on the farm and also how to use farm or construction machinery to build various types of conservation structures.

Careers in the Soil Conservation Service

The Soil Conservation Service is a Federal agency and, as such, is subject to the rules and regulations of the Federal Civil Service, which requires that all new employees be selected from those who have successfully passed the necessary Civil Service examinations.

Professional Employees

Professional employees are hired as agronomists, soil conservationists, agricultural or civil engineers, soil scientists, foresters, or biologists from registers which have been established as a result of Civil Service examinations.

Employees in this category must have had a college training or the equivalent of college training in education and experience. From this group, employees with special aptitudes are promoted to positions of greater technical or administrative responsibility as they demonstrate good performance of their work.

Subprofessional Employees

The main duties of subprofessional employees are to assist professional employees with the details of farm planning or other types of soil conservation planning and to aid farmers to install conservation practices on the land.

Soil Conservation Districts

Each county in North Carolina is in an organized soil conservation district. The Soil Conservation Service has qualified personnel working in cooperation with soil conservation district supervisors in each county in the state.

The Job Ahead

The job ahead is for the present and future generations. The organizational pattern has been put in motion. Civic groups, schools, churches, and numerous organizations are helping. The great need is for professional and civic leadership to move progressively ahead on this job.

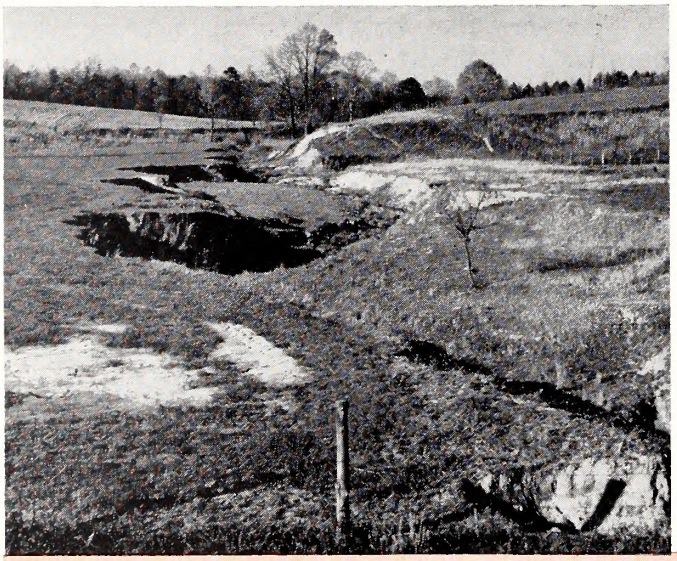


Photo by Jack Dermid

Where once the picture above was a common scene throughout most of America's agricultural lands, the land now appears as a patchwork quilt of terraces and contours when seen from the air. SCS men have been responsible for much of the progress that has been made toward maintaining the productivity of our soil.

Photo by Rod Amundson

BOUNTIFUL BUSHYTAILS

by Jan Martin

The leaves proved to be soft and wet due to the rain of the previous night as I left the house that October morning. The early sun was just beginning to deliver its warmth, knocking some of the chill out of the early morning air.

I took the well-worn path that led up the hill to my favorite squirrel hunting spot, a spring that was situated inside a grove of oak and hickory trees. I cradled the gun on my arm and put my hands in my pockets. They were so cold and numb that I wondered whether or not I could push off a safety. Many times before, I had had to let a squirrel proceed on its merry way because my hand was just too cold to push off the safety.

I followed the path until I arrived at the edge of the woods. From there on I slowed down my pace and moved as noiselessly as possible. Water was still dripping from the leaves above me, for the rain had not been long stopped. The dampness coupled with the overall freshness of the surroundings seemed to spell squirrels. As I walked along, my feet felt like they would freeze off, and I was completely unconscious of any toes. Soon I arrived in the vicinity of the spring, and I strained my eyes for any movement or noise that might designate a bushytail. The spring was in a hollow between two hills covered with big timber and offered an ideal home for squirrels. I had killed squirrels here many times before and they never seemed to run out.

Nothing stirred as I stole softly down the hollow. Finally I came to a spot that seemed to offer a good view of the whole surroundings so I sat down. I looked around from tree to tree, trying to find places that I should try to keep my eyes on, for they might be a favorite gathering place for squirrels. After a half an hour nothing had happened; I had not seen or heard a squirrel. This was normal, I thought, because I must have been seen as I came in.

Then, suddenly, a shower of water descended down from above my head. I looked up and to my joy saw a big, fat squirrel going from limb to limb in the tree under which I was sitting. One shot later, he was in my hunting coat. Pretty good start, I thought, and maybe a sign of things to come. That first squirrel must have broken the ice, because then it all started. For across the way came a virtual cantata of sharp, cracking noises. I strained my eyes to get a better look, and finally distinguished a contented bushytail busily devouring a nut. He was out of range, so I decided to wait and see what he would do. For about five minutes he still sat in the same tree and cut, but then I saw him scurry down the trunk of the tree, making but a faint sound as he hopped to the ground. There was a small mound between where the squirrel was and where I was sitting, and I could not see him, but I could hear him moving around.

For a short while I listened, trying to detect any movement that might betray his position. Then, suddenly, without any warning, his head popped up not ten feet from me! He was so close that I would not shoot, and when he saw me he looked like he had just seen his own ghost, and got the heck out of there. I raised my gun and covered him until I thought I could get a good shot, but before I could shoot the squirrel picked a large oak and scurried up the other side of it. I never saw that squirrel again, and learned later that he went in a hole.

You can't get them all, I thought, and settled down again. Action was not slow coming, for in a hickory tree not far off I saw another one. I shot and down he came, crashing through the limbs of the tree. By the time he met the ground I was almost there, for I didn't want him to get away in case he was only wounded. He didn't move when he hit but I could see that he was not yet dead. I saw that I was going to have to do a thing that I can't stand, and that hurts me all over. That is, to kill a wounded squirrel. If at all possible I want the squirrel to be dead when he hits the ground, taking away the undesirable chore of seeing the squirrel writhe under my blows.

I picked the squirrel up carefully, for once my brother had a chunk bitten out of his thumb while carelessly picking up a wounded squirrel. After one heavy blow behind his neck with my gun barrel, he mercifully died.

During the remainder of the early morning I got three more squirrels, and it was getting too late for the squirrels to be out. It had been nearly a half

See BUSHYTAILS Page 15

The Bluegill

by J. H. Cornell

The bluegill, or blue bream, is one of the most widely distributed of all the sunfishes. In some parts of the state, the word "bream" refers to all the sunfishes in general; and this probably is the preferred meaning. Among some anglers, however, the word "bream" means the bluegill, specifically.

It may have been the common sunfish or pumpkinseed, or it may have been the bluegill, to which Longfellow referred when he wrote:

"Slowly upward, wavering, gleaming,
Rose the Ugudwash, the Sunfish;
Seized the line of Hiawatha,
Swung with all his weight upon it.

• • • • •

But when Hiawatha saw him

• • • • •

Loud he shouted in derision
'Esa! esa! shame upon you,
You are Ugudwash, the Sunfish;
You are not the fish I wanted;
You are not the King of Fishes.' "

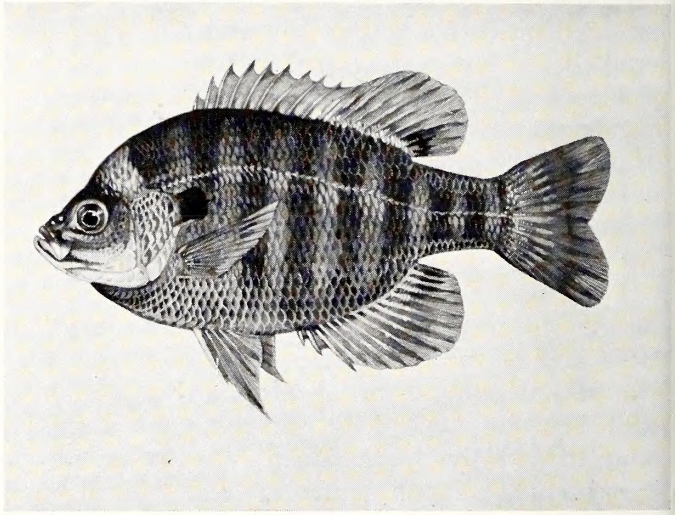
And it may be that Hiawatha was right. Today, most anglers would vote for something larger than a sunfish as the King of Fishes. There certainly would be a minority, though, who would cast their votes for the bluegill. More than one tired business man has expressed the thought that his greatest aim in life is to retire to a little place in the country where he can have a bream pond to produce an endless supply of bluegills and a grove of catalpa trees to produce an equally endless supply of bait.

From among all the sunfishes, most fishermen recognize the bluegill as a large and rather plain-colored fish with an olive-green back, vertical greenish cross-bars on the sides, and a dark blotch at the base of the posterior rays of the dorsal fin. The young are rather silvery with a purple luster, and the cross-bars are pronounced. The bluegill has ten spines and ten to twelve—usually eleven—soft rays in the dorsal fin. The anal fin has three spines and ten to twelve soft rays. There are 38 to 48 scales in the lateral line, with six rows of scales above and 13 or 14 rows below. The name is derived from the fact that the opercular tab is large, almost square, and blue-black in color.

HABITAT

The bluegill is a pond sunfish. It thrives in quiet waters from the smallest ponds to the largest lakes, and in large sluggish warm streams. It rarely is found in fast water and usually is associated with weed beds. There the young take refuge from whatever predators may be present and, if there are enough weeds, survive in tremendous numbers.

In large lakes, they usually are caught on the



edges of bars where there are patches of vegetation. In shallow warm ponds of the "farm pond" type, the control of aquatic vegetation is an absolute necessity. Weeds tend to develop rapidly in such an environment, and the numbers of small bluegills increase proportionately. Soon the pond has an over-abundant population of stunted sunfish which have far exceeded the available food supply. This is the reason that weed control is so important in farm pond management.

LIFE HISTORY

The nests of this species are recognized by most anglers. They usually are from six inches to a foot in diameter, and consist of a circular depression in a clean sandy or gravel bottom. A hard bottom is necessary since silt will smother the eggs. On suitable spawning grounds, the nests are located in colonies and frequently are so close together that the edges almost touch. The "home territory" which the males defend is limited almost to the margins of the nest. In this respect, the bluegill is very different from the largemouth bass which will defend a considerable territory around his nest. Bass nests are not found in colonies.

Bluegill nests are usually in water of six inches

to two feet in depth. However, if the margin of a pond is entirely grown up in weeds so that suitable areas are not available, they do not hesitate to move out into much deeper water to find a clean hard bottom.

It is estimated that each adult female will produce five thousand eggs and, under suitable conditions, will lay this many twice in each summer. The estimate probably is very conservative, for egg counts from the ovaries of an eight-ounce fish have totaled more than fifty thousand.

The first spawning, in the spring, takes place soon after the water temperature goes above seventy degrees. Secondary spawning, which depends on the physical condition of the individual fish and the habitat conditions, may take place at any time during the summer and early fall. Because this species may be expected to be spawning from April to October, it is entirely impractical to attempt to provide a closed season on fishing during the spawning activities. In view of the numbers of eggs produced, a closed season is undesirable anyway. Almost without exception, the crop of bluegills available to the angler is limited by some factor other than successful reproduction.

The food of this species principally consists of insects and crustaceans. Midge-fly and caddice larvae, May-fly nymphs, small crayfish, crickets, grasshoppers, and other terrestrial insects are important items of the diet.

Of very real importance is their tendency to eat the eggs and fry of other species—or even their own under extreme conditions. Especially in small ponds where they have been allowed to become too abundant, they successfully raid the bass nests and the schools of fry. In very crowded conditions they may completely prevent successful bass reproduction.

IMPORTANCE

There is no doubt that, in terms of producing the most sport for the greatest number of people, the bluegill sunfish is the most important form of wildlife in North Carolina today. It is easily caught by the novice as well as the expert. It bites well in the early summer and in the late fall. When the surface waters are cool, bluegills will rise to a dry fly or a "popper" with reckless abandon. When the surface waters become uncomfortably warm in midsummer, they still are willing to cooperate by taking well presented lures at greater depths.

Too many fishermen forget that the bluegill has a very small mouth, even for a sunfish. His diet is limited by the size of his bite. All too many artificial lures are so large that he merely nods his head politely to them as they go by.

Especially in midsummer, when excessive heat causes appetites to be somewhat jaded, a very tiny streamer on a number twelve or fourteen hook will produce results when larger lures fail. Remember, too, that in midsummer the surface waters are warm. Too warm for the bluegill's comfort. The larger individuals especially are much more likely to be found in ten or fifteen feet of water than near the surface.

And give him credit, too, for knowing how to survive the hot weather. In April, he may chase madly after a spinner near the surface, but in September he lies in his deep water retreat and refuses to exert himself. Your lure must go down to him. It must lie there for his inspection. Then it must move—ever so little—just enough to look alive. You must sell the bluegill on the idea that here is a small, bite size, hot weather lunch. It is alive, but it isn't going anywhere, and it will cause him no inconvenience nor discomfort to move just a few inches to get it.

No matter whether you are using natural bait or artificials, the same rules still apply. Small hooks and small baits, fished deep and very very slowly, will put bluegills in the pan even in hot weather.

It is this cooperative spirit that endears the bluegill to the beginner and the expert alike. It is the reason that he provides the most sport for the most people. If a poll were taken among all the fishermen in the State, he might not be voted the King of Fishes, but you can bet your bottom dollar that the bluegill would get more than a few votes.

An impressive string of bluegills replaces the traditional catfish caught by the bare-foot boy with straw hat and cane pole. No fancy equipment is necessary to catch the popular inhabitant of farm ponds.

Soil Conservation Service Photo

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Public Hearings Set for 1956 Inland Fishing Regulations.

At its September meeting at Nags Head the Wildlife Resources Commission set dates and places for three public hearings regarding the 1956 fishing rules applying to the taking of game and non-game fish in the inland waters of the State. Following are the dates, hours and places:

Asheville, October 20, Buncombe County Courthouse 10:00 A.M.
Washington, October 24, Agriculture Building, 10:00 A.M.
Raleigh, October 31, Hall of the House of Representatives, 9:00 A.M.

All persons interested in proposing changes over the 1955 regulations are invited to attend the meetings. Copies of the 1955 rules are available from license dealers or the Wildlife Resources Commission, Raleigh.

* * * *

Big Game Seasons Open October 14 in Most of State.

Hunting seasons for deer, bear and wild boar will open in most of North Carolina on October 14. Since there are several exceptions in some parts of the State big game hunters are urged by the Wildlife Resources Commission to consult the official hunting and trapping regulations for detailed information on dates and bag limits.

* * * *

Wildlife Commission Now Employing Sixteen State College Graduates.

Graduates in Wildlife Conservation and Management at N. C. State College are finding employment with the N. C. Wildlife Resources Commission in professional fish and game work. A news-letter recently issued by the State College Zoology department lists sixteen holders of degrees in wildlife management from State College as being on the payroll of the Commission. Positions held by the men include field biologists, refuge supervisors, hatchery superintendents, federal aid coordinators and federal aid project leaders. The news-letter stated that "We now have the best game administration North Carolina has ever had and we are all proud of the personnel who are helping to make this one of the best Wildlife programs in the entire Southeast."

SCHOOL PAGE

DO YOU KNOW YOUR WATERSHED?

by Lunette Barber

Photos by Jim Lee

You live in a watershed, but what do you know about its soil, water, forests, and wildlife?

Your watershed and its conditions determine whether you have prosperity or poverty in the basin—good or poor of the following: agriculture, dairying, manufacturing, mining, transportation and outdoor recreation. Eroded soil, poor woodland management, lack of cover crops, absence of proper drainage, presence of siltation and pollution with uninformed, disinterested and indifferent citizens are poor "ingredients" for a prosperous basin.

With important watershed problems at her very doorsteps—as it is in most Tar Heel communities—Mrs. Paul Howard, eighth grade teacher in Selma High School, Selma, North Carolina, initiated and taught a unit on the Neuse River Watershed last year with outstanding results. She was amazed at the eagerness with which her pupils tackled the study and the interest they showed in carrying it to completion. Mrs. Howard's experience proves that classwork need not be drudgery at all, that students suddenly become alive and wide-awake in each subject when they are presented with a conservation viewpoint and with local situations emphasized. The study of a unit on watershed is a good beginning to create conservation interest and to bring a fresh approach to the classroom work.

When asked why she chose the local river basin for a unit, Mrs. Howard had this to say, "With the summers of 1952, 1953, and 1954 being unusually dry and the crops suffering from the lack of water which resulted in crop shortages, and with great numbers of ponds being made all over the area for irrigation purposes, and the state legislature discussing further legislation concerning the Neuse Watershed in order to make it a more profitable area, a unit on it was easy to initiate."

Some of the facts that the children seemed to be proud of learning were: that the Neuse River drainage area is about 4,450 square miles and is the second largest entirely in the state; that there are 15 counties affected by the drainage; that the 1954-population was 570,000; that two of the three State Nurseries are in the area—at Goldsboro and Clayton; that three of the nine State Parks are located in the watershed; that the six largest towns are Durham, Raleigh, Wilson, Goldsboro, Kinston and New Bern; that there are 30 natural, and 21 man-made lakes in the basin, that there are 289 streams in the basin making their way to the Neuse River; that 43 public water systems are served by the basin—nine using surface water and 34 using ground water; that it is estimated that the population in 1970 will be 702,000 and that the water used daily for domestic and municipal purposes in the basin which was about 42,000,000 gallons in 1954, will amount to approximately 75,000,000 gallons in 1970; that the Neuse River Watershed Authority was created by an Act of the 1953 General Assembly for the purpose of promoting the mutual interests of the several counties, towns and communities in the Neuse River Watershed.

How was the unit done? Space does not permit a detailed report of the unit, but it was an excellent one. The objectives were outstanding and results most satisfactory. Some of the topics studied were: location, size of basin, tributaries, counties, towns, colonial history, population, soil, water, forests, wildlife, climate and weather, minerals, industry and manufacturing, crops, people, institutions, power, transportation, dairying, and recreation such as swimming, boating, hunting and fishing.

In the wildlife study, it was learned definitely that the rainbow trout could not ride in the "fish mobile," which the pupils made in the room as an

activity, because its home is not in the Neuse Basin but is in the cold mountain streams. Also the ruffed grouse could not ride in the "game-bird mobile" because it too lives in the mountains. Instead the shad was added for the fish but could not remain permanently because it is migratory—comes up the river only in the spring to spawn. The wild turkey took the grouse's seat in the "game-bird mobile." The furbearers rated high in the study of mammals, the otter and mink proving to be most popular. The study finally proved that food, water, homes and protection are just as necessary for birds, mammals, and fish as they are for people.

Two of the most valuable results of the study were the ways learned to protect the watershed and the demonstrations showing ways to conserve natural resources, especially soil and water. A frieze, well illustrated, was made of the ten ways to protect the watershed. The ways are: plant cover crops, practice contour farming, rotate crops, drain land wisely, manage woodlands and pastures properly, construct checkdams, use proper fertilizer and check siltation and pollution.

The demonstrations showing ways to conserve soil and water given for programs and classroom visitors were highly beneficial. They included:

1. The value of contour tillage—demonstrated by using washboard.
2. Raindrop erosion—demonstrated by raindrops splashed on clean white boards.
3. Wind erosion—demonstrated by use of electric fan on sodded and unsodded areas.
4. Water erosion—demonstrated by sprinkling water on sodded and unsodded areas.
5. Value of organic matter in conserving water—demonstrated by adding same amounts of water to containers of soil, one with and one without humus.

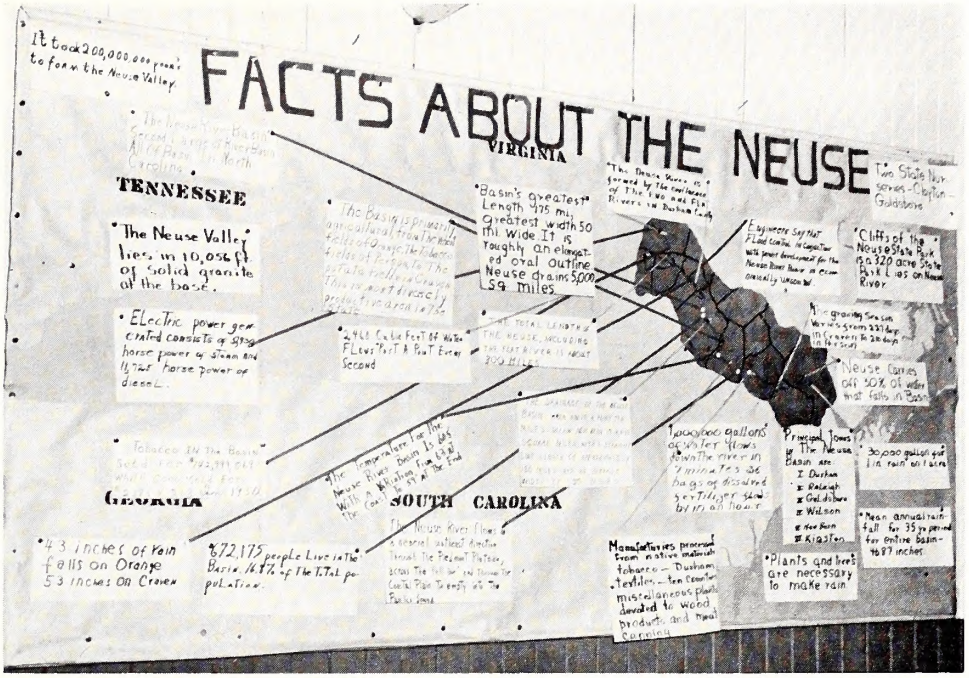
A simple experiment demonstrated to the class the efficiency of contour tillage. When held so that the corrugations ran across, the water slowly trickled down the board, but when the board was held with the grooves running up-and-down the water gushed down the channels of the washboard.

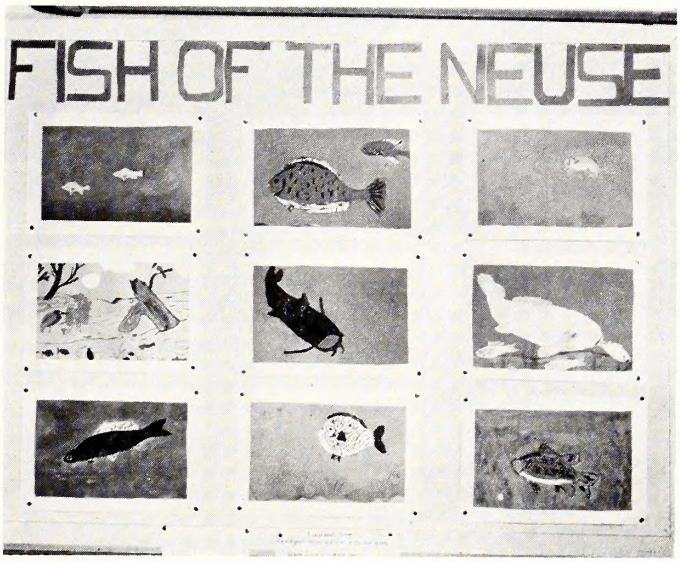
6. Value of cover in controlling erosion in a terraced field—demonstrated by collecting water from covered and uncovered areas.

After the unit was finished, this remark came from Mrs. Howard, "Here is a unit that fits into the interest range of each eighth grader and has, too, the added advantages of using the pupils' environment for its subject matter, thereby providing interesting and valuable experiences for each. This is a unit that can well teach good conservation measures, and by practicing them make the lives of the people of the area more profitable and happy. After all that is the purpose of education."

The area that the class studied included much of the l Plain. Through the study the students learned to apprec graphical features on the area in which they live.

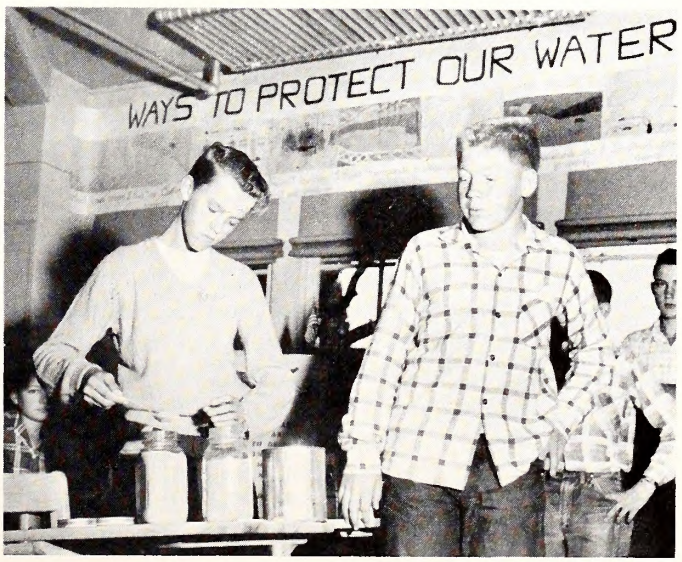
Each student was assigned a topic involving the Neuse watershed, and contributed their information to this bulletin board, which shows some of the features of the area.





The wildlife of the Neuse watershed was an important subject of study, and the members of the class learned to recognize many of the game fish, mammals, and birds of the river basin.

How important is humus to the soil? These boys demonstrated that soil without humus could not hold the water that they poured into it, while a soil rich with organic matter held much of the water that fell on it.



Beaches are deserted in October by nearly everyone except the devoted surf angler, who looks forward all year to the autumn fishing season, when many of the record catches are made.

Nags Head Surf Tournament

Surf fishing addicts from nearly all of the Atlantic Seaboard states will gather again at Nags Head on October 28 for the fourth annual Invitation Inter-Club Surf Fishing Tournament, sponsored by the Nags Head Surf Fishing Club. Following two days of club competition, an open individual tournament will be held on October 30. The tournaments, held under the auspices of the Association of Surf Angling Clubs, are open to interested sportsmen who wish to try their luck at one of the best-known fishing centers in the country.

Local groups wishing to enter the tournament as clubs should furnish the Secretary of the Nags Head club with the name of the group, and the names of five anglers and a captain. Team and individual entries should be sent to Major J. L. Murphy, P. O. Box 143, Kill Devil Hills, N. C., by October 21. There is no entry fee. Substitutions in names will be permitted, and more than five anglers may fish for a group as long as not more than five lines are in the water at one time. A number of special events, including an open casting tournament and a banquet, are planned for the week-end.

Last year's tournament was attended by sportsmen from thirteen states, and included two groups of women's surf fishing clubs among the entries. Highlight of the 1954 competition was the 63-pound channel bass landed by one of the contestants.

PROTECTOR OF THE MONTH

Sam Culbreth

Mr. Culbreth is one of the Wildlife Protectors with more than fifteen years of service, having been appointed Bladen County Protector on March 15, 1940. After serving in Cumberland, New Hanover, and Columbus counties, he received assignment back to Bladen County and has served the Wildlife Protection Division in that county since 1946.

Surf fishermen gather around the back of their station wagon to bait their hooks for channel bass. Surf fishing need not be a lonely sport, as evidenced by the number of clubs that now exist along the coast.

Photos by Jack Dermid

Mr. Culbreth was born in Bladen County in April 27, 1909 and received his education in the public schools of Bladen, Halifax and Pitt counties. He has also completed two sessions in Wildlife Protection Training, given by the Institute of Government, University of North Carolina, Chapel Hill, North Carolina. He is a member of the Bladen County Sportsmen's Federation and the Southeastern Association of Game and Fish Commissioners. Mr. Culbreth married Miss Griselda Clark of Council, North Carolina and they attend the Presbyterian Church in Elizabethtown, North Carolina, where they make their home.

IT'S THE LAW!

Question: Is it lawful for a groceryman to purchase squirrels and rabbits and then resell them to his customers?

Answer: Section 113-102 of the General Statutes of North Carolina states: "It shall be unlawful at any time to buy, or sell, rabbits or squirrels for the purpose of resale."

ENFORCEMENT RECORD FOR JULY

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of July, 1955:

Persons checked	**23,981**
Total prosecutions	**542**
Total convictions	**526**
Total fines collected	**$ 3,132.99**
Total costs collected	**$ 3,944,79**

No part of the fines or costs collected are paid to the Wildlife Commission or its personnel. All fines and any arrest or witness fees charged in favor of Wildlife Protectors are paid into the schools funds of the counties wherein the violations occurred.

WILDLIFE EXHIBITS

In many counties throughout North Carolina county fairs highlight the harvest-time activities. Some of the Wildlife Protectors put up small booths where they sell subscriptions to WILDLIFE IN NORTH CAROLINA, discuss the State's wildlife program with the people of their counties, and answer questions regarding regulations on hunting and fishing. If the Wildlife Protector in your county has a booth at your county fair, stop by and chat with him. He'll appreciate it.

During the third week in October the North Carolina State Fair will draw thousands of people to Raleigh. All our readers who attend the State Fair are invited to see our exhibit in the Industrial Building, which this year will be built around the economic value of wildlife in our State. We'll be looking for you.

BUSHYTAILS
from page 7

an hour since I had last seen a squirrel, so I decided that I would head back for home. I started to rise, when suddenly another squirrel showed itself in a small oak tree that sort of stood to itself, the nearest tree to it being about ten yards away. I haven't got time to sit and wait for him, I thought, and, seeing that the tree was out to itself, I decided to run over and get under the tree to try to trap the squirrel up in it. I had a good chance to, I thought, if there was no den in the tree.

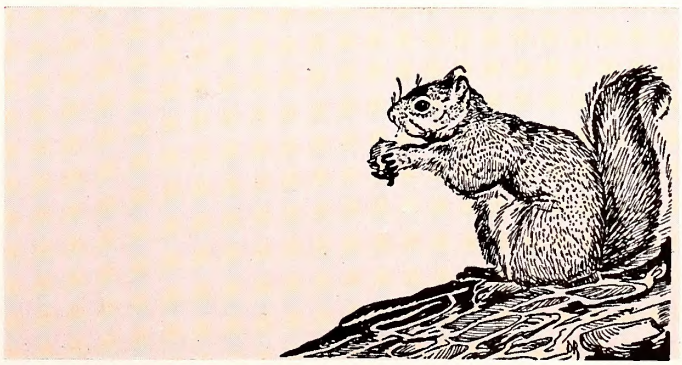
Before I had gotten halfway there, the squirrel saw me and ran over to the other side of the tree. I got under the tree and tried my dead level best to find him, but I just wasn't able, for the squirrel was getting the best of a hide-and-seek deal. For perhaps ten minutes I examined every limb from A to Z, but still no squirrel. I moved around to the other side of the tree and looked again but still I couldn't see him. Then, as I proceeded to move around the tree again, I momentarily saw the swish of a grey tail go around the tree. I hurriedly tried to follow him around the tree trunk, but he always managed to stay on the other side of the tree from me.

Then out of the clear blue sky, I had an idea. Crazy, I thought, but maybe just crazy enough to work. Seeing that I was having no success trying to get him in my gun sights by trying to outmaneuver him, I decided to try it.

"Hey, Joe," I said to my mythical companion, "there he is on your side of the tree, shoot him!"

And, just as I had hoped, the squirrel moved over to my side and I bagged him.

I had no watch, but, by the look of the sun, it was getting near noontime. So, I gathered up my seven squirrels and started home, thinking as I left those favorite woods of mine that it had again turned out to be a place where bushytails were bountiful. As I neared the house I imagined that I could already smell the succulent aroma of the squirrel stew that would surely be for supper.



Getting Started

With Your NRA Hunter Safety Course

by Bill Clede

Photos by Jim Lee

In the five short years that the NRA Hunter Safety program has actually been in effect, results have been realized that continually point out the benefit of training new hunters in proper gun handling afield. The adage that safety is best attained through education is repeatedly proven to be true. Statistical reports of official state programs invariably show a decided reduction in the firearms accident rate proportionate with the degree and scope of the education offered.

Every true sportsman recognizes this great need for training and more than nine thousand competent hunters have voluntarily met the requirements and passed the examination to become NRA Hunter Safety Instructors. The procedure for becoming certified as an Instructor is relatively simple. By writing to the National Rifle Association, 1600 Rhode Island Avenue N.W., Washington 6. D. C., you may request and receive a packet of information on attaining this rating. On becoming certified, you receive an official identification card stating that you are rated as an INSTRUCTOR in the NRA Hunter Safety program and are thereby authorized to conduct classes and to award certificates to deserving graduates of the course.

In an effort to institute a corps of trained instructors, many official and quasi-official groups over the country have sponsored Instructor training clinics. Your basic knowledge of hunting and gun safety is necessary but of even greater importance is your ability to pass that knowledge along to others. That, however, is material for a textbook in itself. Suffice it to say here that the NRA will furnish you with instructor guides and other training materials at moderate cost to help you with your program.

The problems of sponsorship, place and publicity are up to you to resolve. An individual Instructor, beginning a Hunter Safety Course on his own, is confronted with these problems as well as the club which sponsors a course. Problems are not insurmountable even for the individual but the responsibilities are negligible when divided among the members of a committee. The Rifle Club, Sportsman's Club or other civic-minded group which sponsors a Hunter Safety Course should establish a Committee for Safety Training consisting of at least five persons.

The Chairman is, of course, responsible for the over-all operation of the entire program but the assistants serve to lessen the workload on any one individual. One committeeman should be charged with providing the place to conduct the course and he may be called the "Range Officer." Best results may be obtained by having separate range and classroom facilities and, wherever possible, an outdoor area where actual field problems may be presented to the students and solved by them.

Another responsibility is that of assuring that all necessary supplies and training material is available at the right place when needed by the course Instructor. This Supply Officer should order all material so that duplications may be avoided.

The Secretary should maintain a record of the NRA Student Registration cards. These cards, available from the NRA, may be retained in your own file as a separate report form is furnished for you

Careful instruction in gun handling and shooting result in safer and more successful hunters. Seldom does the trained hunter make the mistake of shooting what he cannot see clearly . . .

to notify the NRA of your activities. Other duties such as correspondence, attendance records and progress reports, keeping financial records and preparing reports naturally fall to this office.

In addition to extra Instructors, the committee must have a means of informing the public of the program. The Public Relations Officer serves many needs of promotion, but let's deal with him later.

While the Supply Officer is ordering the material suggested in the NRA Hunter Safety Instructor's Guide, the Range Officer arranges for the location. The local High School will often have a rifle range and certainly the classrooms so contact the Principal and explain the purpose of your project. New Hampshire, Vermont and Arizona have enacted legislation permitting the public schools to include Hunter Safety education in their regular curriculum. Your Principal will probably be happy to make the needed space available. National Guard Armories and other military installations have been found to be very cooperative in providing ranges. A local NRA club having a range is an excellent bet.

These classes need not be conducted indoors alone. During the cold months comfort dictates indoor activity but it is preferable to hold classes outdoors, weather permitting. A safe, though perhaps temporary, range may be established in a vacant pasture provided an adequate backstop is available. A wooded area, in a safe direction from the range, may be utilized to conduct actual field problems (without ammunition, of course). Fences, creeks, boats and simulated obstacles may confront the students while the Instructor is afforded the opportunity to observe the student's reaction and correct possible errors.

. . . And seldom does he miss the target that he aims at. These Boy Scouts, working on their Marksmanship Merit Badge, would be safe companions on a hunting trip after their lessons.

Now that you have the necessary personnel, material and place all you have to do is "spread the word." It may be better not to over-publicize the first session since more people may show up than your group can properly handle. However, with a schedule of *consecutive* courses, you should make up a master list of all prospective students and schedule definite classes to begin on definite dates. As soon as an individual has been scheduled to attend a certain class, advise him when to appear and where the course is to be held. He will not mind waiting as much if he knows that he is registered and scheduled.

Regardless of the advance publicity given to your activity, few persons may appear interested. Consider your own reactions to news items—are you more interested in a notice that something is going to be held or do you react more favorably to a report of some successful course actually being conducted?

When the first class graduates, take a good picture and submit an 8 x 10 glossy print along with a short write-up of the course to your local newspaper. Keep the report limited in length. The Editor must consider the amount of space that he can devote to any one story and, even though your safety course is newsworthy, it cannot monopolize the page. Be sure to emphasize the success and benefit of your class and mention names, especially important or well-known ones.

If at all possible, the Public Relations Officer should get to know the Editor—contrary to the amateur writer's belief, he is a human just like us. Inform him of your activity and keep him posted of new developments and interesting occurences.

An excellent method of promoting this activity is to offer to conduct a Hunter Safety Course for a Boy Scout troop, school class, or other group (many new adult hunters may want to take the course). In this way you assure a full class without the liability of over-population. In any event, keep the news items going to the paper. Report unusual incidents or items of general interest and you will keep the inquiries coming in.

When the first course is completed the group should get together and thoroughly discuss every detail. Was anything left out? What did we need but not have? Did the class have a convenient number of students? What did we forget to do? Did the students receive the training they were led to believe they would receive? Just as the child learns by asking questions, so do we. Question every aspect of this first course and, where needed, improve or correct anything left undone. Any problem you cannot solve, refer it to the NRA Headquarters. Their purpose is to help you.

NORTH CAROLINA'S WILDLIFE PROTECTORS

These are the people who protect your heritage—cooperate with them!

(Listing as of October 1, 1955)

Anderson, Walter F.	3305 Ruffin Street, Raleigh	Res. 2-2226 — Off. Ext. 7191
Charles, Helen	7 South West St., Raleigh	Res. 2-0212 — Off. Ext. 7191
Sullivan, Edward J.	617 New Road, Raleigh	Res. 3-0951 — Off. Ext. 7191

DISTRICT NO. 1	ADDRESS	COUNTY	TELEPHONE
Robertson, Hugh A., SUPV.	P. O. Box 203, Hertford	Perquimans	2966
Earley, J. O., Jr.	126 E. Main St., Plymouth	Hertford	2601
Pierce, Lester	Rt. 3, Box 278, Elizabeth City	Pasquotank	5079
Barber, W. P.	Box 35, Elizabeth City	Pasquotank	
Barnes, D. E.	Corapeake	Gates	2127
Bazemore, Henry L.	McGlohon St., Ahoskie	Hertford	
Cahoon, Horace A.	61 Front St., Hertford	Perquimans	
Cahoon, James L.	Swanquarter	Hyde	
Dail, Harold R.	Gen. Del., Robersonville	Martin	4020
Vacant		Currituck	
Evans, Robert E.	Edenton	Chowan	122 Centre Hill
Everette, Lindsay	Watson St., Windsor, N. C.	Bertie	
Forbes, J. H.	Poplar Branch	Currituck	
McPherson, Harry G.	Camden	Camden	
Mosley, E. L.	Box 141, Columbia	Tyrrell	2071
Register, Wade A.	P. O. Box 86, Kill Devil Hills	Dare	2101 (T. V. Hines)
Terry, J. T.	Plymouth	Washington	5441
White, William S.	Manns Harbor	Dare	137 Englehart

DISTRICT NO. 2			
Watson, Raymond A., SUPV.	Route 2, New Bern	Craven	9146
Massengill, David C.	Box 396, Burgaw	Pender	2223-0
Overton, C. J., Jr.	Aurora	Beaufort	2511
Anderson, James O.	Box 193, Jacksonville	Onslow	4678
Barkley, Dennis E., Jr.	Box 481, Oriental	Pamlico	431
Bell, D. B.	Box 972, Kinston	Lenoir	6572
Eaker, Jesse L.	Box 308, Washington	Beaufort	Res. 1120 W—Off. 513
Edwards, John O.	Kenansville	Duplin	2123
Fraley, Freelen L.	Rt. 4, Box 369 B, New Bern	Craven	9165
Hill, Melvin E.	Rt. 2, Snow Hill	Greene	411
Hudson, George N.	Box 247, Bayboro	Pamlico	2921
Koonce, Lonnie	Richlands	Onslow	3326
Padgett, Edgar T.	2402 Fisher St., Morehead City	Carteret	
Parker, Carlton R.	Pollocksville	Jones	375
Sheppard, Preston	Rt. 1, Box 171, New Bern	Craven	2504
Spain, L. C.	P. O. Box 75, Aurora	Beaufort	2011
Teel, J. O.	Route 6, Box 340, Greenville	Pitt	6324

DISTRICT NO. 3			
Woolard, C. N., SUPV.	Box 562, Wilson	Wilson	3592
Buffaloe, James T.	331 Eastern Ave., Rocky Mount	Nash	2-5508
Spain, C. B., Jr.	Gen. Del., Nashville	Nash	5191
Coward, Victor, Jr.	P. O. Box 428, Scotland Neck	Halifax	5091
Crews, Norfleet G., III	Rt. 3, Box 55, Henderson	Vance	4811 (Dabney-message)
Howell, A. G.	Rt. 5, Goldsboro	Wayne	2697W3
Hughes, N. B.	Jackson	Northampton	2106
King, J. Harold	405 S. Fourth St., Smithfield	Johnston	3029
Perry, Bob D.	Rt. 2, Wake Forest	Wake	5105
Pridgen, Alton D.	Rt. 3, Box 172, Warrenton, N. C.	Warren	52-58-Warrenton
Smith, William D.	905 Trade St., Tarboro	Edgecombe	
Walls, Elmo L., Jr.	204 N. Pine Street, Wilson	Wilson	Res. 4703—Bus. 2376
Wilson, P. B.	Bunn	Franklin	4189 R. I. Mitchell message

DISTRICT NO. 4			
Caine, E. W., SUPV.	Box 924, Lumberton	Robeson	5423
Boswell, B. L.	Bolton	Columbus	Station II
Chadwick, Oscar	Rt. 3, Fayetteville	Cumberland	3-3001
Bordeaux, Amos	Box 77, Ingold	Sampson	250-Garland
Bostick, Leroy F.	Rt. 1, Box 36, Laurel Hill	Scotland	745-J-1
Bowmer, H. T., Sr.	Southport	Brunswick	4091
Cannady, Jack M.	804 Veda St., Fayetteville	Cumberland	Fayetteville 2-7750
Coleman, James H.	Bolton	Columbus	2-Station
Culbreth, Sam	Elizabethtown	Bladen	3255
Gilmore, Joe H.	Box 2, Clinton	Sampson	2468
Johnson, Stanley Ray, Jr.	Box 5165, Elizabethtown	Bladen	3744
Johnston, Robert C.	Box 806, Red Springs	Robeson	5416

McLean, H. R.	Raeford	Hoke	8720
Musselwhite, J. L.	307 Virginia Ave., Wilmington	New Hanover	2-9952
Sellers, Robert K.	Box 1011, Lumberton	Robeson	4319
Sigmon, Troy M.	Box 125, Chadbourn	Columbus	3981
Wright, Robert W.	Box 498, Lillington	Harnett	4856

DISTRICT NO. 5

Rollins, Tom L., SUPV.	Box 907, Sanford	Lee	4-4503
Hammer, Robert H.	Creedmoor	Granville	2691
Webb, Charlie E.	Route 1, Brown Summit	Guilford	4843
Allen, Raymond Y.	Leasburg	Caswell	7366
Clary, L. R.	101 Stafford Place, Greensboro	Guilford	51541
Dagerhardt, Ralph W.	Oxford	Granville	3140
Daniel, Maurice J.	Rt. 1, Roxboro	Person	4573
Davis, John K.	Route 4, Roxboro	Person	2056
Jones, A. Eugene	Siler City	Chatham	285
Lamphere, Paul D.	562 E. Presnell St., Asheboro	Randolph	4975
Logan, Robert F.	Box 1084, Chapel Hill	Orange	9-8534
Neal, A. D.	Rt. 1, Stokesdale	Rockingham	5056-Madison
Perry, Vance M.	Box 344, Graham	Alamance	6-2749
Roseberry, James E.	Box 128, Kannapolis	Cabarrus	
Rosebrock, Norman L.	P. O. Box 683, Sanford	Lee	583-L
Ward, Marvin L.	Rt. 1, Morrisville	Durham	6-5732-Durham

DISTRICT NO. 6

Wade, R. Frank, SUPV.	Box 802, Albemarle	Stanly	1653
Capel, C. M.	Box 155, Mt. Gilead	Montgomery	19
Greene, James B.	Rt. 13, Box 608, Monroe Rd., Concord	Cabarrus	2-6533
Armfield, S. M.	Rt. 1, Marshville	Union	24-R
Bray, Walter	Box 92, Rockingham	Richmond	3980
Brown, John O.	Rt. 1, Charlotte	Mecklenburg	ED-3-7732
Griffin, Ralph R.	318 N. Washington Ave., Wadesboro	Anson	757-G
Milstead, Robert E., Jr.	Box 175, China Grove	Rowan	251-J
Overcash, Ray A.	Box 326, Southern Pines	Moore	Aberdeen 8835
Poole, Cleat E.	Box 568, Troy	Montgomery	4916
Sides, Harold	General Delivery, Albemarle	Stanly	
Wheless, Jimmie J.	112 Oak Ave., Lexington	Davidson	2-0342

DISTRICT NO. 7

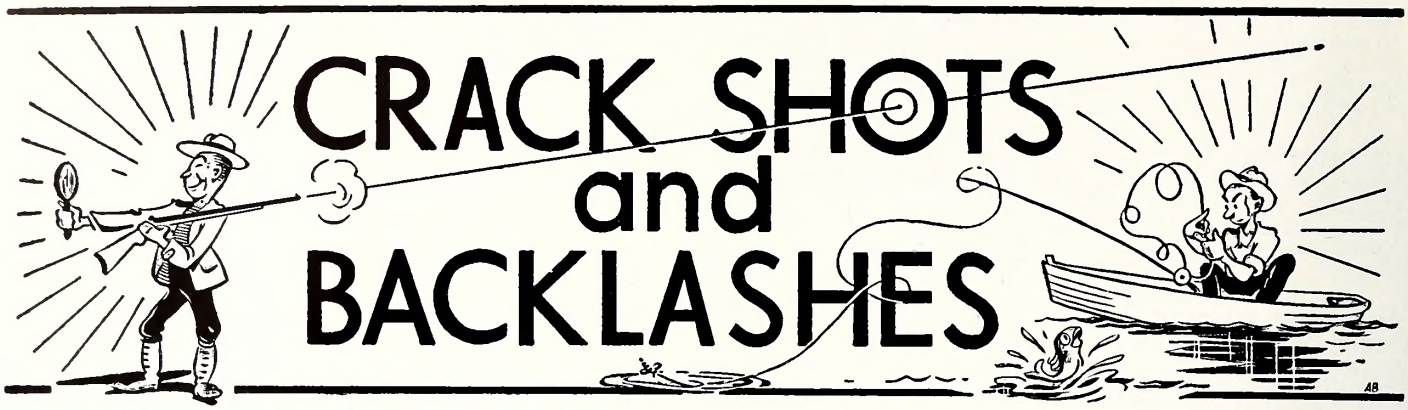
Edmisten, Walter F., SUPV.	Boone	Watauga	Amherst 4-8644
Beamer, George B.	Rt. 3, Mount Airy	Surry	1751-J
Woodruff, T. B.	Rt. 2, Mocksville	Davie	1610-J
Aldridge, Billy R.	Box 325, N. Wilkesboro	Wilkes	573-M
Ball, Vernon F.	Rt. 2, Box 280, Elkin	Surry	1645-M
Barr, George A.	King	Stokes	YU38476
Bryan, DeWitt T.	Glade Valley	Alleghany	72F4 Sparta
Forbes, Miles E.	932 W. Front St., Statesville	Iredell	3750
Jones, W. W.	2830 Patterson Ave., Winston-Salem	Forsyth	3-2091
Koontz, Roland H.	Jefferson	Ashe	4386
Mackie, Frank W.	Yadkinville	Yadkin	3161
Osborne, Tommie F.	Boone	Watauga	Amherst 4-3809
Phipps, Walter Clifton	Rt. 3, Mocksville	Davie	1610-J (Woodruff's No.)
Reese, Frank B.	Rt. 2, Taylorsville	Alexander	2351

DISTRICT NO. 8

Rivers, Dwight G., Jr., SUPV.	P. O. Box 814, Morganton	Burke	2915
Curtis, Donald E.	313 Vale St., Marion	McDowell	7842
Fairchild, John T.	Conover	Catawba	1606
Allran, Cecil E.	107 N. Government St., Lincolnton	Lincoln	1254-J
Beatty, James N.	Box 86, Marion	McDowell	9962
Carpenter, Wallace M.	Three Mile	Avery	5
Higgins, Milton B.	Burnsville	Yancey	881
Lindsay, Cecil	Box 545, Lenoir	Caldwell	4-6967
McLean, J. D.	407 Oakdale Ave., Gastonia	Gaston	5-2771 (Sheriff's Office)
Peeler, William B.	Route 1, Mooresboro	Rutherford	8115-Ellenboro
Price, Jesse O.	Box 1195, Shelby	Cleveland	6659
Radford, James P.	Box 264, Spruce Pine	Mitchell	Poplar 549-55
Rhyne, Robin H.	Rt. 2, Box 56-A, Morganton	Burke	1395-R
Teseneer, C. M., Jr.	Gen. Del., Conover	Catawba	1111-M

DISTRICT NO. 9

Wooten, Howard L., SUPV.	Box 206, Clyde	Haywood	3151 Canton
Martin, Harrison J.	Rt. 5, Franklin	Macon	289J4
Ray, Avon O.	Box 2365, Asheville	Buncombe	2-4710
Beard, Roy Wayne	Box 2554, Asheville	Buncombe	2-9758
Boring, Charles H.	Route 1, Franklin	Macon	12W2
Crain, Wade	Rt. 1, Bryson City	Swain	2196
Dalrymple, Arnold R.	Murphy	Cherokee	241-J
Danner, Wiley W.	Box 1005, Sylva	Jackson	Sylva Hotel No. 15
Garland, C. L.	Robbinsville	Graham	13-J (Sheriff's Office)
Jackson, Clyde L.	Gen. Del., Hendersonville	Henderson	9920
Martin, Jimmie R.	Box 86, Hayesville	Clay	2662
Pack, Arthur	Rt. 1, Tryon	Polk	495 (Police Dept.)
Ramsey, Raymond C.	Rt. 1, Mars Hill	Madison	(Service Motor Sales, Marshall, Tel. 2401)
Williams, Frank Earl	Box 58, Waynesville	Haywood	6-4500



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

For a number of years there has been growing interest and activity in the establishment of commercial game bird shooting grounds, and now North Carolina has taken the initial step in getting these areas established here.

At a recent meeting the Wildlife Resources Commission set up a list of rules and regulations which make possible the establishment and operation of commercial shooting grounds for non-native game birds such as pheasants, chukar partridge and others.

Since the birds involved are pen reared and non-native, commercial shooting grounds will get a four month season running from October 15 through February 15 with the usual prohibition of Sunday hunting. Such birds as pheasants are raised in pens by shooting grounds operators, and then released on the area from time to time as shooting pressure demands.

Here are the regulations as currently in effect in North Carolina:

REGULATIONS RELATING TO ESTABLISHING AND OPERATING COMMERCIAL PHEASANT SHOOTING GROUNDS

Pursuant to authority vested in the North Carolina Wildlife Resources Commission, the following regulations shall apply to the establishment and operation of Commercial Pheasant Shooting Grounds:

1. Any individual, association, or corporation desiring to operate commercial pheasant shooting grounds must first make application on forms provided by the North Carolina Wildlife Resources Commission.

2. The Commission may, upon payment of the required fee of twenty-five ($25) dollars and under the following conditions, issue to the applicant a Commercial Pheasant Shooting Grounds Permit:

(a) When the operation of such shooting grounds will not conflict with prior reasonable public interest.

(b) When the size of the area to be established as a shooting grounds is not less than one hundred (100) acres nor more than one thousand (1,000) acres and the grounds are contained in one continuous block.

(c) When the applicant can produce evidence satisfactory to the Commission that they will be able to raise or purchase for liberation and will liberate on the shooting grounds at least one hundred (100) non-native pheasants for each one hundred (100) acres of shooting grounds, such liberations to take place between the first day of October and the fifteenth day of February each year.

3. The boundary of each Commercial Pheasant Shooting Grounds shall be marked by a single strand of No. 9 wire or other fence and shall be posted not more than 150 feet apart with printed notices supplied by the Wildlife Resources Commission to the permittee at a reasonable cost.

4. Commercial Pheasant Shooting Grounds Permits shall entitle the holder or holders thereof, and their guests, to kill or take on such grounds by shooting only non-native pheasants and/or chukar partridges without regard to sex or bag limits from October 15 to February 15 inclusive, except Sundays.

5. The open hunting season and bag limits for game birds and game animals other than non-native pheasants and chukar partridges found on the Commercial Pheasant Shooting Grounds shall conform with the State-wide regulations governing the taking of these species.

6. Before any propagated or released game killed under the provisions of a Commercial Pheasant Shooting Grounds Permit shall be consumed on the premises or removed therefrom, the permittee shall attach a tag to each bird killed. Such tags are to be numbered consecutively and are to be supplied by the Commission at a reasonable cost to the permittee. These tags shall remain attached to the

individual birds until prepared for consumption and shall not be used more than once, but be immediately destroyed on removal.

7. Every person hunting on such commercial pheasant shooting grounds, or participating in a shoot held under a Commercial Pheasant Shooting Grounds Permit, shall be possessed of a resident or nonresident hunter's license for the current year as required by law.

8. The permittee shall maintain a daily record bearing the name, address, and hunting license number of each hunter using the grounds and shall make this record available to any authorized Commission employee upon request.

9. Authorized employees of the Commission shall be permitted to enter the premises at reasonable times for inspection or for scientific investigation.

10. Permits to operate Commercial Pheasant Shooting Grounds may be revoked by the Executive Director at any time for violation of any provision of these or subsequent regulations, or terms of the permit.

For several years the Wildlife Commission has paid $20.00 per million for rockfish eggs brought to the Weldon hatchery. This has been done to encourage cooperation on the part of anglers to supply the hatchery with eggs. The eggs are counted by volume measure, and after the transaction has been duly recorded the lucky anglers gets a check from the Commission. A large female rockfish can yield a million eggs, although this rarely happens.

At least one angler, however, thinks that the fun of fishing is compensation enough. Here is his letter:

"Mr. J. H. Cornell
Chief, Fish Division
Raleigh, N. C.
Dear Mr. Cornell:

"I am returning your check of $9.40 in payment for the striped bass eggs I carried to the Weldon Hatchery in Weldon, N. C. during the bass season.

"Mr. Cornell, I am not a rich man, and I am not trying to be smart. It is a pleasure, and I enjoy fishing for striped bass. The State of North Carolina and the Wildlife Resources Commission have spent more time and money to make fishing and hunting more fun, pleasure, and health for my family than I can ever repay you.

"Thanking you just the same, and I cannot thank you enough. I remain

Yours truly,
Edward George
Roanoke Rapids, N. C."

"Mr. Edward George
1330 Roanoke Avenue
Roanoke Rapids, North Carolina
Dear Mr. George:

"May we thank you for the sentiments expressed in the letter which returned to us your check for the striped bass eggs. We sincerely appreciate the sentiment which prompted you to write your letter and return the check.

"We really believe that most sportsmen feel as you do and understand that we are doing our best, within the limits of our means and abilities, to provide better hunting and fishing for the sportsmen of our State. Only occasionally, though, does anyone take the trouble to tell us so.

"An occasional letter, such as yours, gives us an added inducement to do our very best in carrying out the principles for which the Wildlife Resources Commission has always stood. It is only by the continued assistance of interested sportsmen like you that it is possible for real progress to be made.

Sincerely yours,
J. H. Cornell
Chief, Fish Division"

"Dear Sir:

"Enclosed is my check for two years of WILDLIFE IN NORTH CAROLINA.

"I have always supported in my small way, the fine program being carried out by our Wildlife Resources Commission. I have one complaint, however, and hope you can correct it. The hunting regulations never list seasons for duck and dove hunting. To me, this information is difficult to obtain. I strongly feel that it should be listed with other game seasons found in regulations.

"Will you please send me dates for 1955-56 dove hunting.

Yours truly,
A. C. Todd, Jr.
Durham, N. C."

Upland game regulations are set by the Wildlife Resources Commission during the summer so that they can be printed and distributed to license dealers by August 1 when hunting licenses go on sale. Dove and waterfowl regulations are set by the U.S. Fish and Wildlife Service much later, and cannot be included with State regulations. They can be obtained from the Fish and Wildlife Service, Washington, D. C. or Washington, N. C.

THE DUCKS ARE COMING

Photo by Jack Dermid

Here is a familiar October scene on Currituck Sound, one of the east coat's most famous waterfowl hunting areas. Although birds are just beginning to pour in from the north and the waterfowl season is a month off, it is none too early to get the blinds shipshape. Here Vernon Pugh (left), and Jack Helms, guides of Grandy, are working pine boughs and long-stemmed grasses into perfect camouflage.

"Dear Sir:

"Your article dealing with pollution of streams and rivers was most interesting and constructive. We have only to look at the French Broad, Tuckaseegee, and Pigeon rivers to see what havoc is being caused by pollution.

"There are hardly any good fish left in these streams, and the waters therefrom are unfit for irrigation or stock. It is high time definite steps were taken to correct this condition, rather than to hide our head in the sand like the ostrich, for we'll never 'get our cornbread made' just by talking about it.

Yours truly,
Thomas D. Westfeldt
Fletcher, N. C."

"Dear Sir:

"I do not wish to renew my subscription to WILDLIFE. Too much about fish, of which I have little interest.

Yours truly,
Mrs. P. R. H."

Some folks say we don't use enough about fish. We try to balance material between hunting and fishing, each in its own season; realizing that our job is to keep as many people happy most of the time as is editorially possible. (—Ed.)

"Mr. W. Guerry—532-1

"Re: Duck Hunt at Mattamuskeet in November, 1955

"I have received a copy of your letter to the Superintendent in charge of North Carolina Wildlife Commission Mattamuskeet Lake, New Holland, North Carolina, requesting application for a party of four (4) to duck hunt in November, 1955, at Mattamuskeet.

"I would like to express my appreciation to you for including me as a member of your party.

"My wife has graciously consented to my going on this year's hunt under the following provisions, which, as a matter of interest I am listing below.

"1. I am to agree to wash dishes from December 1955 to February 1956.
"2. Make beds for two (2) weeks on return trip.
"3. Buy one new dress and hat for my wife.
"4. Cook breakfast on Sunday morning for five (5) Sundays.
"5. Go dancing at least twice a month during the month of December, 1955.
"6. Be especially good about doing little things around the house, such as:
a. Waxing the floors once every two (2) weeks.
b. Allowing my wife to have preferences on all TV shows for a period of two (2) months.
"7. Of course I will have to give up golf all together.
"8. Bird hunting in the winter will be one (1) Saturday out each month with no promise of rain or snow checks.

"Walt, by reviewing the above items, you can well see that the outcome of this year's duck hunt will mean everything to me.

"May I invite your attention to items (7) and (8) not to mention item (6).

"In the event that this hunt proves to be fruitless in as far as ducks are concerned, I am listing the following beneficiary to my National Life Insurance Policy:

"The Superintendent In Charge of North Carolina Wildlife Commission Mattamuskeet Lake, New Holland, North Carolina.

"Here's hoping to have lots of fun and no worry on our duck hunt this year.

Yours truly,
Dave"

"Dear Sir:

"You could multiply your subscription price by two, three, or four, and it would still be a good bargain. We, in Alabama, do not seem to be able to publish anything so good; but I do enjoy your magazine and my occasional trips to North Carolina. Am planning to spend about 10 days in your beautiful state within a few weeks.

Yours truly,
J. W. Spencer
Birmingham, Ala."

CAN YOU CAPTION THIS CARTOON?

The situation portrayed in this cartoon *probably* has never actually occurred but if it did, what would the lucky angler say to his companion, who was left out of the picture? Dream up a caption and send it in . . . the best caption submitted wins a two-year subscription to WILDLIFE IN NORTH CAROLINA. Duplicate prizes will be awarded in case of a tie. Examples are: "Hey, how's this for ten-pound test line!" "Joe, is the season open on this yet?" "Joe, how do you like the action on the end of this rod?" Write your idea on the back of a postcard along with your name and address and send it to CARTOON CONTEST, Box 2919, Raleigh. The contest closes November 15.

From Stepps Gap, a safe reconstructed road now winds its way to the Camp Alice wilderness hunt shelter and then extends about three miles into the primitive country beyond. The tower atop Mt. Mitchell is visible in this view.

A land of sky, balsams, rough mountain ridges, and big game awaits hunters who plan to participate in the wilderness hunts scheduled to begin in November. Spectacular vistas of distant mountain ranges are everywhere.

HIGH COUNTRY

High on the slopes of Mt. Mitchell, the Wildlife Resources Commission has rebuilt the Camp Alice logging road to make the area more accessible to big game hunters.

Photos by Jack Dermid

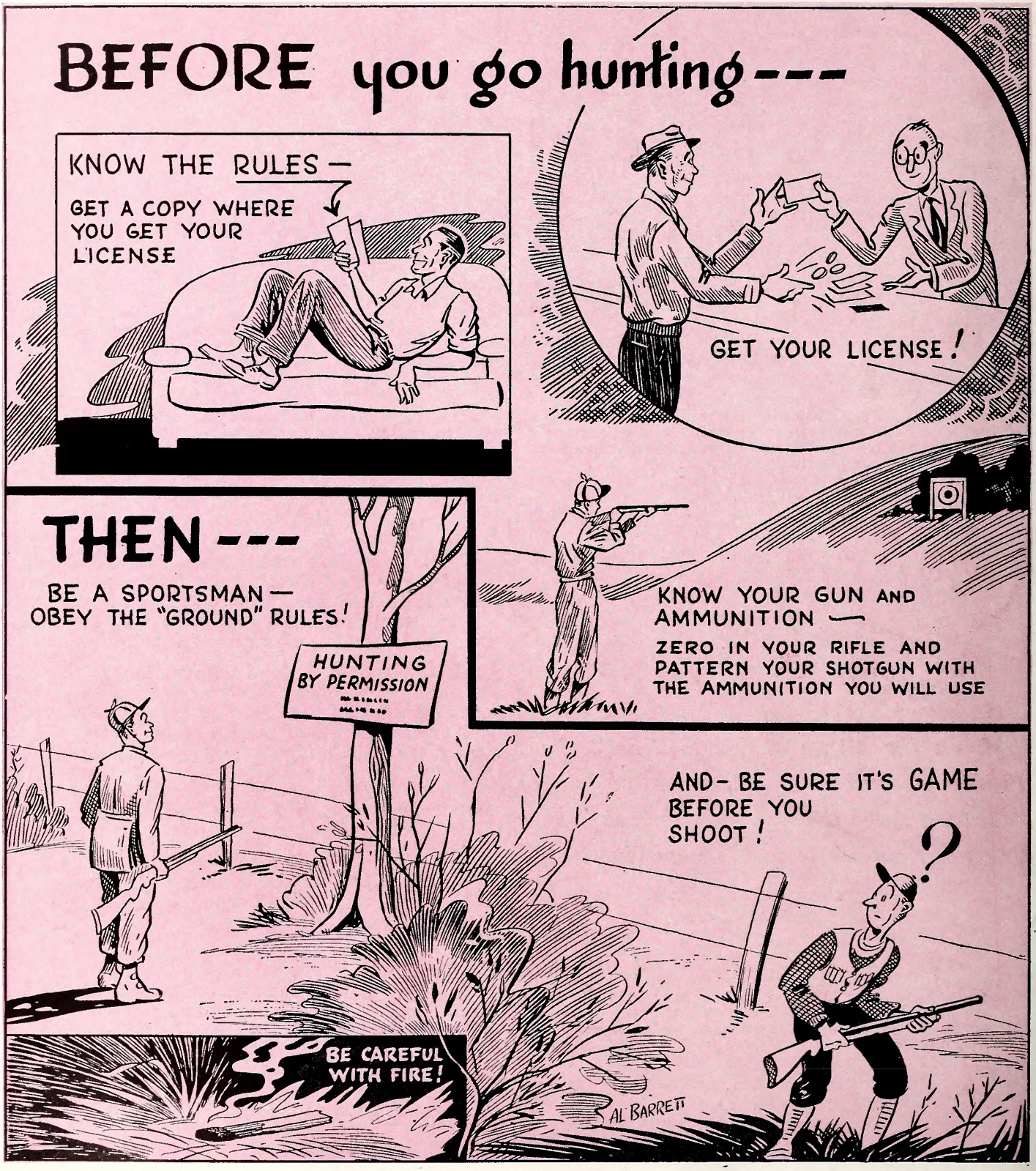
Between November 21 and December 3, four three-day wilderness hunts will be held in the high country of Mt. Mitchell Management Area near old Camp Alice. Here are some views of the area that will recall pleasant memories to hunters who have been there and give others a preview of things to expect.

The wilderness hunt is a combination hunting and camping trip designed for those hunters who prefer hunting in rugged country under primitive conditions. The sportsmen must bring their own food, tent, blankets, and other camping gear, but they will find open air grates, water, a community shelter, and firewood awaiting them. To eliminate unnecessary traffic and retain a primitive atmosphere, hunters are required to remain in the area until their hunts are completed.

Besides Mt. Mitchell, wilderness hunts will be held on Fires Creek, Pisgah, and Daniel Boone Wildlife Management Areas.

For years, bears living in the Camp Alice area have left their sign on this forest service telephone pole and finally chewed it in two. Here, Lee Boone, refuge manager, checks recent tooth and claw marks.

A shelter, where hunters can gather before a huge fireplace to swap tales in cozy comfort, is located at the edge of a grassy meadow about 6,000 feet above sea level. Note the deer browse line on the rhododendron in right foreground.



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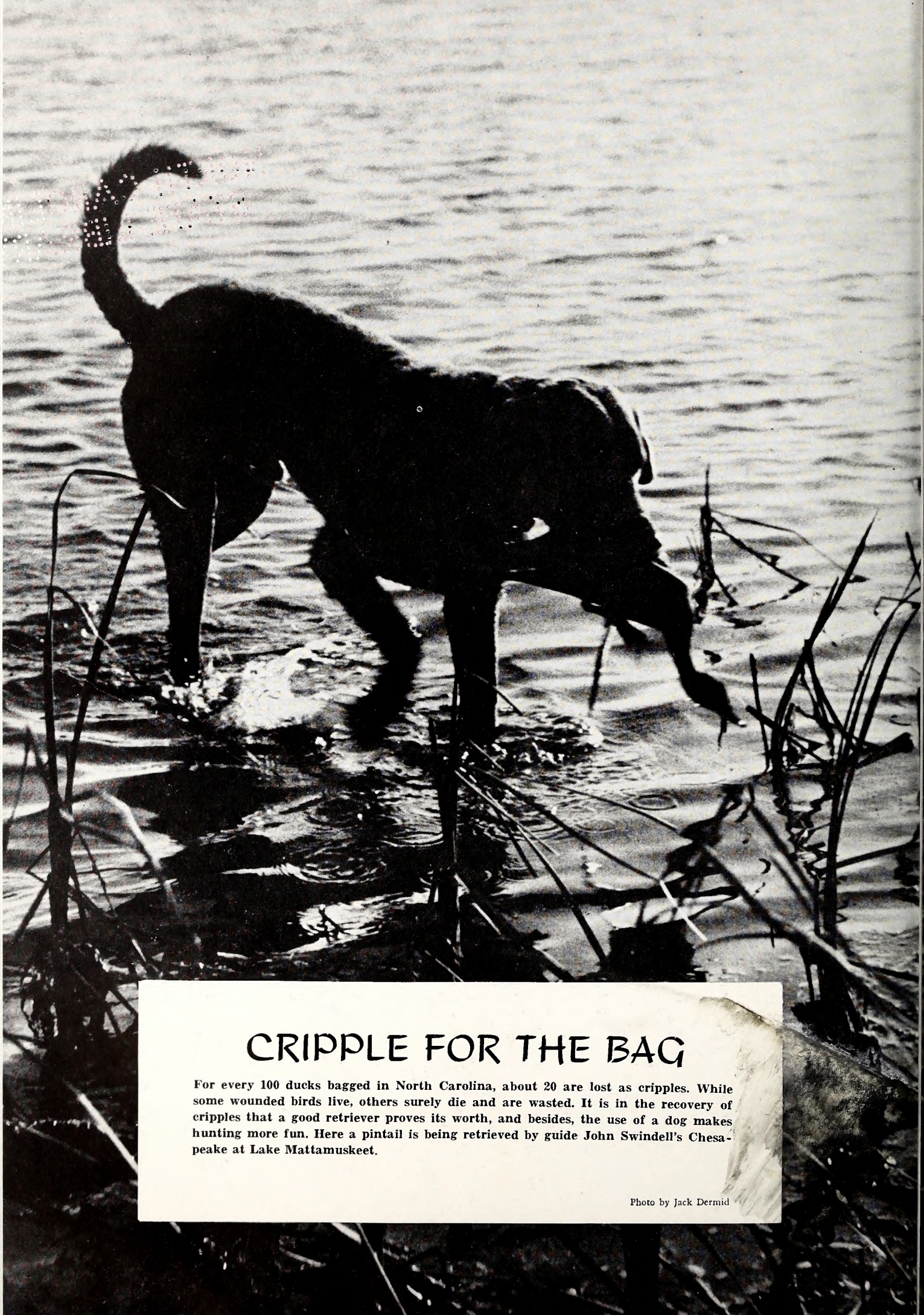

CRIPPLE FOR THE BAG

For every 100 ducks bagged in North Carolina, about 20 are lost as cripples. While some wounded birds live, others surely die and are wasted. It is in the recovery of cripples that a good retriever proves its worth, and besides, the use of a dog makes hunting more fun. Here a pintail is being retrieved by guide John Swindell's Chesapeake at Lake Mattamuskeet.

Photo by Jack Dermid

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

LUTHER H. HODGES
Governor

North Carolina Wildlife Resources Commission

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COVER

As his natural habitat decreases, the wild turkey becomes scarcer. There are still enough, however, in some sections of the State to cause an occasional hunter to lose a few heart-beats at the sight of our finest game bird. Oil painting by Al Barrett.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

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THREAT TO THE NORTHWEST

Alleghany Rabies Epidemic

By Chester S. Davis

Reprinted permission Winston-Salem Journal and Sentinel

An overabundance of stray dogs, too many foxes, and too many unvaccinated pets have combined in Alleghany County to threaten not only wildlife but people and livestock as well.

Part I

As Burt Crouse closed the pasture gate he motioned us on and said, "That's him standing under that tree."

We walked to a cut bank above a mountain branch and looked down on Mr. Crouse's two-year-old, pure-bred Hereford bull. The animal stood quietly in the shade beside the branch. His legs were widespread, and as we came up, he stretched his neck out and began to bawl.

It wasn't the bellow of a normal bull. It was a coarse, mule-like hee-haw and it went on and on until the skin on the back of a man's neck crawled.

It was a minute or more before that hopeless bawling played out in a gasping moan. Then there was a clatter and a meaty thud and the big bull dropped in his tracks. He lay there on the ground, legs pinned under his body and his neck stretched out. Except for the slight heave of his ribs he lay as still as death.

Lyle Jones, Alleghany County's health sanitarian watched the bull for a moment and then he turned to Burt Crouse and said, "He's mad all right. Expect he'll be dead by morning."

Mr. Crouse nodded. He wasn't surprised. Within the past year or so he has seen cattle on six neighboring farms die of rabies. In the Cherry Lane section of Alleghany animals driven to madness and then to an inevitable death by the bite of a rabid fox have been common enough.

But Burt Crouse was worried.

Had the mad fox that attacked his bull bitten other animals in the herd?

The symptoms of rabies ordinarily appear within two to eight weeks, but there have been instances where 90 days and more have passed before the first symptoms of madness and approaching death were noted.

And Mr. Crouse also was worried about the scratches on his hand. Earlier in the week, before the bull began to bawl and before the tell-tale paralysis of the hindquarters was noticeable, Mr. Crouse had worked with a cow whose back was wet with saliva from the mouth of this bull. He had smeared some of that saliva on his cut hands.

How Rabies Hits

Rabies is caused by a virus, and in the final stages of the disease, when the symptoms of the destructive madness first appeared, that virus crops up in the saliva of the stricken animal.

The fox that came into Burt Crouse's pasture carried that virus-laden saliva in his mouth. In all probability the bull, seeking to drive the small fox away, came out of the herd, snorting and pawing. The fox, mad beyond any fear, attacked the lowered head of the bull, ripping and tearing at the nose and face.

The rabies virus was punched into the bull's body by sharp teeth. That virus first settled in the nerve tissue. Later, it traveled up the trunks of the nerve system to the bull's brain. Once there, the symptoms—paralysis, the peculiar bawling, heaving constrictions and, sometimes, the evil wildness of a mad animal—appeared.

At that time the saliva that hung in strands from the bull's mouth was virulent.

The chances are that this particular bull had not reached that stage when Burt Crouse smeared the saliva on his hands. And the chances are good that the cuts on Mr. Crouse's hands were neither fresh enough (under 24 hours) or deep enough (down to nerve tissue) to permit the virus—if, indeed, it was present—to take hold.

But in the case of rabies any chance—no matter how slim—worries a man.

Once the virus gets a toe-hold in the nerve tissue the result always is same. The victim dies. There is no cure. Death is as certain as tomorrow's sun.

There is, however, one shield a man can stand behind and use to ward off this deadly virus. That is the Pasteur treatment. It consists of 14 to 21 shots of anti-rabies serum. Taken promptly, this series of shots will, in the great majority of cases, prevent the virus from obtaining a start in the nerve system.

The story of Burt Crouse and his bull is not pleasant. But here in the Northwest we have some mighty unpleasant facts to face.

A rabies epidemic has begun in this area. It is a virulent epidemic. For the size of the area involved it is probably the most virulent rabies epidemic in the United States today.

Right now the epidemic is largely confined to Alleghany County. But mounting evidence indicates that the epidemic is spreading.

Unless we promptly take steps to check this epidemic, the chances are excellent that within the next year or two we will see the story of Burt Crouse and his bull re-enacted a thousand times.

In order to appreciate just how real this threat is, it is essential that we take a long and thoughtful look at just what has happened in Alleghany County.

Outbreak in Alleghany

In 1950, when Lyle Jones came to Sparta as Alleghany County's sanitarian, there was no rabies in the area.

In 1951, however, a stray dog came up from Surry County and bit a number of dogs in Alleghany's Saddle Mountain community. Mr. Jones was unable to have a brain study done on this dog (the animal was killed by a shot in the head) but all the symptoms pointed to rabies.

He patiently identified the dogs bitten by this animal. Ten were located and, with the permission of the owners, destroyed.

But there may have been other dogs bitten. It is also possible that this stray from Surry planted rabies in Alleghany's fox population.

It is more likely, however, that the county's foxes were first infected by rabid foxes that came out of Virginia. In 1951 and 1952 rabies was reported in fox in Carroll and Grayson Counties to the north of Alleghany.

In any event, rabies in the Alleghany fox first cropped up along the Virginia line in the Ennice community early in 1952.

During 1952 there were sporadic outbreaks of rabies in the county.

In July a man brought a dead fox in to Lyle Jones. A brain examination done in Raleigh showed that this fox was mad.

Then, late in the year a rabid fox bit six calves in the Piney Creek community.

In 1952 and again in 1953 Mr. Jones and Dr. O. M. Fulcher, the county's only veterinarian, warned that the rabies problem was getting out of hand.

They urged the County Commissioners to employ a dog warden. A warden was needed, they said, to bring the stray dog population under control.

But at that time the Commissioners were not alarmed. They did not believe they could afford a dog warden. They did, however, permit Mr. Jones to build a dog pound.

Farmers in the area were asked to capture stray dogs and bring them to the pound. In all, some 90 dogs were disposed of through this voluntary pound.

For a time it appeared that such a half measure

Lonnie Edwards, Alleghany farmer and County Commissioner, who lost four head of cattle after attacks by rabid foxes, keeps a close watch over his herd of Herefords. All of his animals have now been vaccinated. By the end of June at least 59 cattle had died from rabies.

Photos by Martin Howard for Winston-Salem Journal and Sentinel

was sufficient. There were no positive laboratory identifications of rabies in the county during 1953. However, in the Ennice area and elsewhere in the county there were some cases which pointed to rabid fox.

In March, 1954, Mr. Jones got a positive identification on a mad fox. That was the first of 10 laboratory identifications made during 1954.

"There were, of course," Mr. Jones says, "a far larger number of cases where farmers reported symptoms that clearly indicated rabies."

Then, in 1955, the smouldering epidemic caught fire.

The chart on this page tells that story.

Between Jan. 1 and June 30 of this year 132 rabid animals have been spotted in the county. And, Mr. Jones adds, "Since June 30 we have had at least 20 additional identifications. You can say that so far we have had more than 150 positive identifications of rabies."

Those figures—only the cases that Mr. Jones and Dr. Fulcher know of personally—don't begin to tell the story.

"Farmers in the county have lost livestock and failed to report the loss. Sometimes," Mr. Jones says, "I will hear of livestock that died with what sounds like rabies. But I only report the cases where I have a positive laboratory identification or where Dr. Fulcher diagnoses the case as rabies."

Rabies takes two general forms.

In the furious form the maddened animal is active and dangerous. In Alleghany there have been cases where rabid sheep repeatedly charged boulders and butted the skin off their skulls. There have been mad horses that attacked men on sight, pawing and biting. Some cattle, of course, will charge wildly at any target within sight.

Dr. O. M. Fulcher (left) and Lyle Jones check a specimen that the county's only veterinarian has examined under his microscope. The specimen came from an animal suspected of rabies. Jones, the county sanitarian, has worked closely with veterinarian Fulcher.

ALLEGHANY RABIES IDENTIFICATIONS
January 1 through June 30, 1955

Identifications based on laboratory examination of the brain of suspected animals:

29 red and gray foxes
2 dogs
1 cat
11 cattle
1 horse

Identifications based on clinical observation of the symptoms of suspected animals:

25 red and gray foxes
8 dogs
6 cats
48 cattle
1 horse

Authorities estimate that for every reported case of rabies there probably are five others—and perhaps as many as 10—that never appear on official lists.

On one Alleghany farm a fox bit a hog. That hog later went mad and bit its pen mate. Both hogs died.

Rabid animals in the furious stage lose all sense of fear. Fox, for example, ordinarily are shy and rarely seen by humans. This spring, when the county began its trapping program, one farmer told the trappers, "There's no sense of your coming on my land. There's no fox here."

In two nights the trapper caught six fox on that one farm.

When a red or gray fox trots boldly into a farm yard and attacks a pack of dogs, you can be almost certain the animal is mad.

Other animals are affected in the same manner. In the Cherry Lane Community Mrs. Nannie McCann's dog was attacked and bitten by a rabid skunk. A rabid fox in the county entered a trailer parked on the Blue Ridge Parkway and tried to bite the owner.

The dumb form of rabies is probably just as common as the furious. Here paralysis sets in early and death comes quickly. Animals stricken with the dumb form of the disease are not active and, ordinarily, not dangerous. They creep off to some secluded spot and die. These animals rarely appear on any list.

Men who have studied this strange disease believe that for every positive identification of a mad animal there are at least five others—and perhaps as many as 10 others—who die of rabies without being reported on the official list.

That fact alone provides some measure of the virulence of this outbreak.

The second part of this article will appear in the December issue of WILDLIFE.

North Carolina's Top Fishing Spot in 1956

The LAKE JAMES STORY

by Jim Lee

The story of fishing in Lake James begins several years ago, when the fishing was not very good. There was an excellent population of smallmouth bass in the lake, as both the biologists and the fishermen agreed. Schools of bass could be observed by the fishermen on every trip, but the problem was that they just would not bite. The reason for this was obvious, too. There were schools and more schools of gizzard shad which kept the bass so well fed that they just were not interested in biting pieces of wood and feathers with hooks attached.

Although there were lots of fish, the fishing was sorry and the fishermen were frustrated. They demanded the only thing they knew—more bass stocking. The biologists knew that stocking was not the answer because the lake was already carrying all the smallmouth bass that the habitat would support under the conditions at that time. They knew, and the fishermen knew, that thousands and thousands of bass had been poured into the lake every year and that fishing had not been improved by that method. The question was, how could it be improved?

No matter how many fish are present in a lake, they must be hungry in order to provide good fishing. One obvious answer then was to decrease the supply of gizzard shad. It could not be done by adding more bass, because the lake already had all the bass it could support. The best way looked like the introduction of another predaceous species which would be interesting to the angler and which would not compete with the bass.

The introduction of chain pickerel, or "jack", was suggested. The suggestion was dropped because there was no suitable spawning ground in the lake for that species. The next suggestion was walleyes, and this looked more reasonable. They are not quite as predaceous as the jack, but they are at least as predaceous as bass and are excellent game fish. The next question was, how suitable is the habitat for walleyes?

The lake looks like a walleye lake. The water is clear and cold. It is deep, and the lake bottom is relatively unsilted and the water remarkably free

Thousands of acres of lake bottom were exposed during the drawdown. This picture, made early in the spring of 1955, was taken along the Linville River arm, where fishermen had to drive a half mile across the grassy plain to reach water. Old stumps and foundations marked the site of farm houses that stood before the lake was built.

Photo by Jim Lee

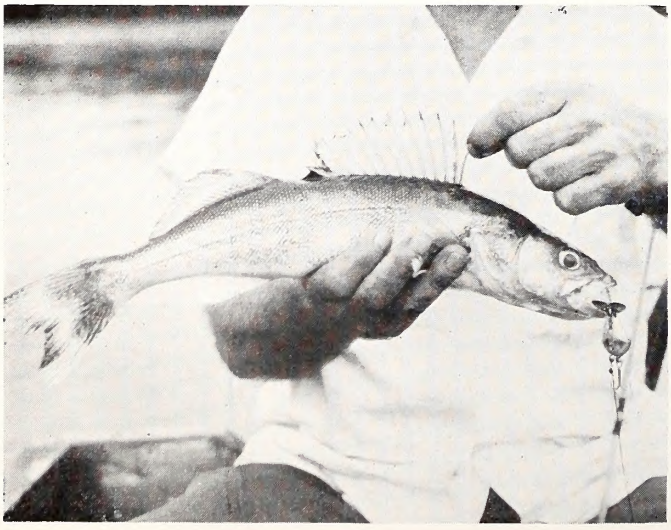
from pollution. It lies in the rolling foothills up against the eastern shoulder of Blue Ridge Mountains. It is fed by the Catawba and Linville rivers which usually are clear and cold. The Linville, especially, is such good water that trout occupy it all the way to the lake. This appears to be one requirement of a good walleye lake because the mouth of such a tributary usually provides the best spawning conditions for this species.

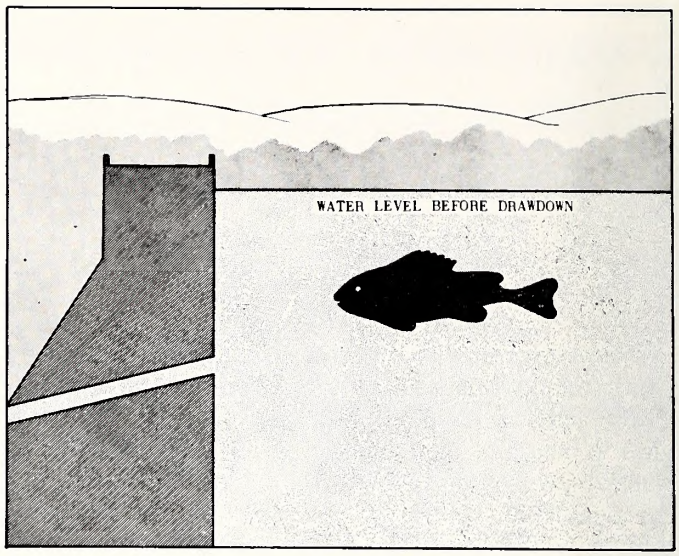
The next question was where walleye eggs might be obtained, since they are not available commercially. This question was eventually solved by the generosity of the State of New York which gave North Carolina several million eggs as a starter. The eggs were hatched out, and part of the resulting fry were stocked hopefully in Lake James. The fishermen were told that this effort was not only to improve the fishing in Lake James, but to use the lake as a hatchery to provide brood stock for introducing the species in other lakes which might provide less desirable habitat but which might have improved fishing by the presence of some walleyes. They were warned that if the walleye became established, adults would be netted for transfer to other lakes.

The planting was successful. Within two years, walleyes of desirable size were being caught in considerable numbers, and in three years the game fish production of the lake was nearly doubled. Also, the predation of the walleye on the gizzard shad cut down their supply to the point where the bass were just a little more hungry than they had been in the past and more bass were caught. By the spring of 1954, it was apparent that the walleye population would permit a transfer of brood stock to other lakes. This project was planned for the winter of 1954.

A walleye pike from Lake James displays his large eye and predaceous mouth. Walleyes taken from James were used to stock all of the Piedmont power reservoirs earlier this year.

Photo by Jack Dermid





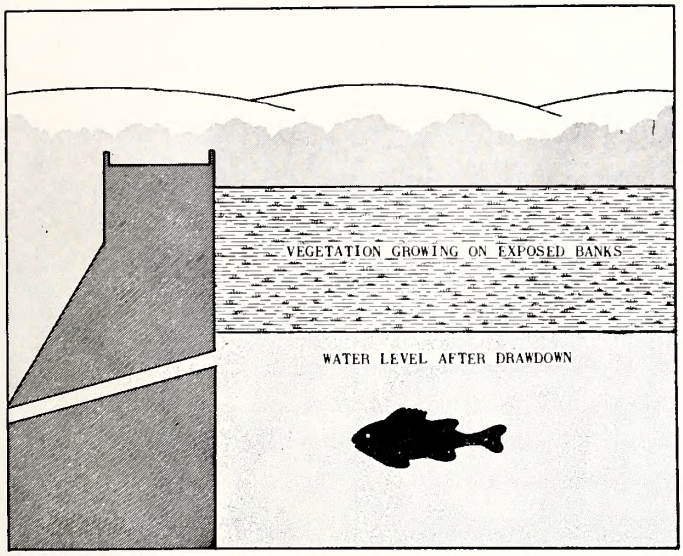
BEFORE DRAWDOWN

This pictorial representation of Lake James demonstrates what has happened during the past few years to the lake bottom and

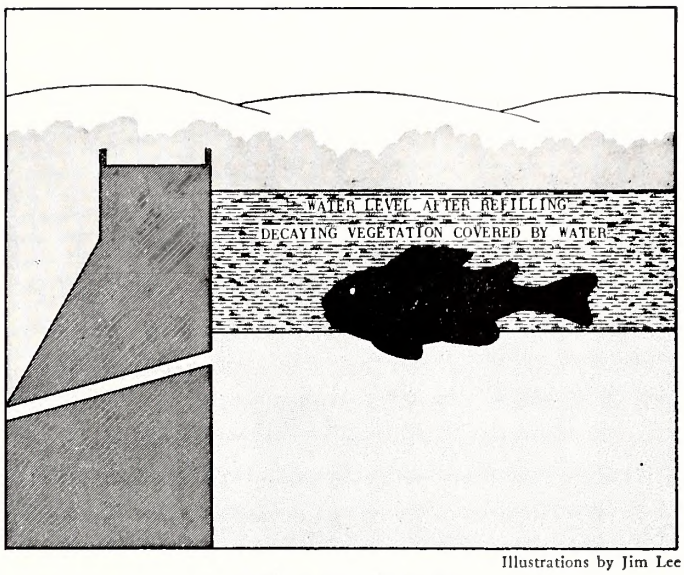
Lake James exists because the Duke Power Company created the impoundment to produce electric power. There was great consternation when the Duke Company officials announced that it would be necessary to draw the lake down to extremely low levels in order to repair their power structure during the late summer of 1954. There were visions of both the bass and walleye population disappearing completely as a result of this activity. Actually, the biologists visualized a better game fish population after the drawdown was completed. They knew that extreme drawdowns frequently are of great benefit to game fish populations, and that such a procedure is often a good management method in situations where it can be followed.

Drawdowns are beneficial because they reduce the fish population, and especially the population of the smaller specimens. Some of the fish leave the lake as the drawdown takes place. The remaining population is concentrated, and the predators can further reduce the small specimens left. The benefits of such fluctuations were carefully studied and recorded by the late Dr. Eschmeyer in his studies of Norris Reservoir in Tennessee. He found that there was a stable growth rate for young-of-the-year game fish during periods of constant water levels. However, after drawdowns and the refilling of the lake, the growth rate was increased to about one and one-half times its former level. Such an increase is expected to be taking place at this time in Lake James.

The drawdown actually facilitated the planned transfer of walleye from Lake James to other waters which were thought possibly to provide good walleye habitat. Many of the adult walleye, which came



DURING DRAWDOWN



Illustrations by Jim Lee

AFTER REFILLING

to the fish. The relative size of the fish is for the young hatched during the current year. When the lake was drawn down, year-old fish were much smaller, but when the lake was refilled they thrived on the food they found in decaying grass.

out of the lake during the drawdown, were concentrated in a large pool below the power house. Officials of the Duke Power Company very kindly permitted Wildlife Commission employees to have access to this pond in order to collect the walleye for distribution. These fish were distributed in accordance with the previous plan for introduction of the species in other suitable waters.

Now it is an established fact that game fish have the ability to occupy a new habitat very quickly when it is created by a new impoundment. They can occupy the habitat faster than the non-game species. It is always anticipated that in a new lake the fishing for game fish will be best within the first few years after it is filled. The drawdown of Lake James and its subsequent refilling gave the Wildlife Commission an opportunity to do its best in helping to recreate those conditions which produce a good game fish population in a new reservoir.

The history of similar situations has shown that during the time a lake is drawn down, dry-land vegetation, principally grasses, occupy the exposed basin after the water has been withdrawn. This vegetation, of course, decays rather quickly after it is flooded by the filling of the reservoir. The decay of this organic matter provides the basis for a food supply which is in excess of that normally expected in a constant level reservoir, and consequently provides more fish food. Also, since there are fewer fish remaining, each fish gets more food and his growth rate is increased proportionately. This principle is the basis for the improved population and the improved fishing in a new impoundment or in an impoundment where similar conditions have been created.

In the Lake James basin, the conditions were carefully studied. Native grasses came in on the exposed lake bottom in the upper reaches where some siltation had taken place and where the basin was flat. It appeared that Nature could be assisted by getting grasses started on the steeper slopes of the reservoir basin. Duke Power Company officials were consulted, and they gave permission for the planting of grasses on the steeper slopes with the provision that no planting should be done near the edge of the reservoir. This was to prevent the creation of a mosquito breeding ground and the possibility of a threat to public health and comfort. The Wildlife Resources Commission planted grasses on hundreds of acres of the steeper slopes but well below the eventual water level. This had the effect of producing organic matter to begin the food chain after the lake was filled. In addition to the efforts of the Wildlife Commission, the fishing public owes a vote of thanks to the Duke Power Company for permitting this management procedure to be followed.

Today, fishing is excellent in Lake James. It is one of the best fishing spots in North Carolina at this time, and probably will be even better in the spring of 1956. The fishing was improved by three basic management methods. The over-abundant food supply was decreased by the successful introduction of an additional predator species. An extensive drawdown reduced the total population of both game and non-game fish, and created a situation where the game fish could occupy the new habitat when the lake was filled. The growth rate of the game fish was further increased by the planting which was done to provide more food for the remaining fish in the reservoir. These pro-

See LAKE JAMES Page 19

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

November 24 Designated Law Enforcement Day

At its October meeting in Raleigh the Wildlife Resources Commission again designated Thanksgiving Day, November 24, as Law Enforcement Day in North Carolina. On that date the seasons on wild turkey, quail, and rabbits opens, and the season on squirrels in the central section (24 counties) opens on that date. In addition to the regular staff of wildlife protectors, 93 of whom are equipped with patrol cars, all male personnel of the Commission will be out in the woods and fields looking for law violations. Last year on Law Enforcement Day the largest number of violations involved lack of proper hunting licenses. Walter Anderson, Chief of the Commission's Wildlife Protection Division, has ordered a "crackdown" on this and other types of violations.

* * * * *

Outlook For Quail Varied This Year

Bird hunters who take to the field after bobwhite quail this fall will find varied success, depending on where they go. In some sections of the state quail are plentiful, but other locations will yield fewer birds due to heavy late summer rains and other factors. Best shooting may be expected in the Piedmont although good shooting will be found in many parts of the Mountain and Coastal Plains sections.

* * * * *

Time To Order Bicolor Lespedeza and Multiflora Rose Seedlings

Farmers and sportsmen who want to improve conditions for small game can get planting stock for hedge rows and field borders by making application to the Wildlife Resources Commission, local Soil Conservationists, wildlife protectors and field biologists. The Commission has produced about 1,000,000 multiflora rose seedlings and 10,000,000 bicolor lespedeza seedlings for free distribution throughout the state. Orders for the seedlings will be processed on a first-come-first-served basis. Seed stock was produced at the Commission's new nursery near Chapel Hill. Delivery of planting stock has already begun.

* * * * *

Waterfowl Season Opens One-half Hour before Sunrise November 7

The season on ducks, geese, and other migratory waterfowl opens one-half hour before sunrise November 7 and extends through January 14. Shooting hours will be from one-half hour before sunrise to sunset, except in Currituck and Hyde counties where shooting stops at 4:00 P.M. (except Ocracoke Island).

Home of The Geese

Photo Feature by Gene Hester

Far to the north, in the Canadian wilderness around Hudson Bay, our North Carolina migratory waterfowl spend the summer. Gene Hester, N. C. State College wildlife management graduate, spent three months there banding waterfowl for the Atlantic Flyway Council and the North Carolina Wildlife Resources Commission.

I know where the wild goose goes. I found out this summer when, as a representative of the North Carolina Wildlife Resources Commission and the Atlantic Flyway Council, I traveled to James Bay, Canada, to help in the annual waterfowl banding project that is sponsored jointly by Canadian and American conservation agencies. Unraveling one of the biggest mysteries in nature, the banding program provides information necessary to chart the routes of migratory birds. The bands, returned to the U.S. Fish and Wildlife Service by sportsmen who shoot the banded birds, complete the story that begins in the vast wilderness of Canada, where most of our waterfowl spend their summers. Some birds are banded on the wintering grounds, and are picked up by the trapping operations in Canada. These birds tell us where our winter visitors make their nests. A practical application of the information obtained is the setting of season bag limits for waterfowl by the Fish and Wildlife Service, which predicts the available supply of waterfowl for an area based on reports of the nesting success in the north.

Gene Hester
(two months in the wilderness)

Traveling by airplane, automobile, train and canoe, our party of Canadians and Americans reached James Bay the first week in July, shortly after the end of the nesting season. The first month was spent on Charlton Island, in the middle of lower James Bay, where we banded 99 geese by driving the young flightless geese into nets. The operation was halted when the geese were old enough to fly, and we moved to the west coast of James Bay, where bait-trapping stations for ducks were established. During the month of August and early September the party split up into smaller groups. Our team banded 350 ducks, mainly pintails and black ducks. The team consisted of a Canadian guide, Alex Hunter, Joseph Hager of the Massachusetts Division of Fisheries and Game, and myself. Hunter, who is a conservation officer for the Ontario Department of Lands and Forests, is a native of the desolate James Bay area. Although living conditions were very primitive, the experience of seeing our migratory birds in their summer home was more than worth the long journey into Canada's muskeg.

The banding station was established along the coast of James Bay, which is the lower arm of Hudson Bay. Ducks nested in inland ponds and were trapped in small fresh-water ponds as they gathered along the coast prior to migration. This scene, photographed at high tide, shows the flat slope of the land. At low tide the water was a mile out from the high tide mark, although the fall of the tide was only five feet.

James Bay, indicated on thi
than a thousand miles fro
North Carolina. Geese and
their winter homes from th
son Bay.

Flock after flock of pintails arrive at the coast in late August, congregating before making the long flight southward. Among the first to arrive at Lake Mattamuskeet, they pause in North Carolina for only a short while before continuing their journey to South and Central America. Later arrivals will spend the winter along the Carolina coast.

Home of

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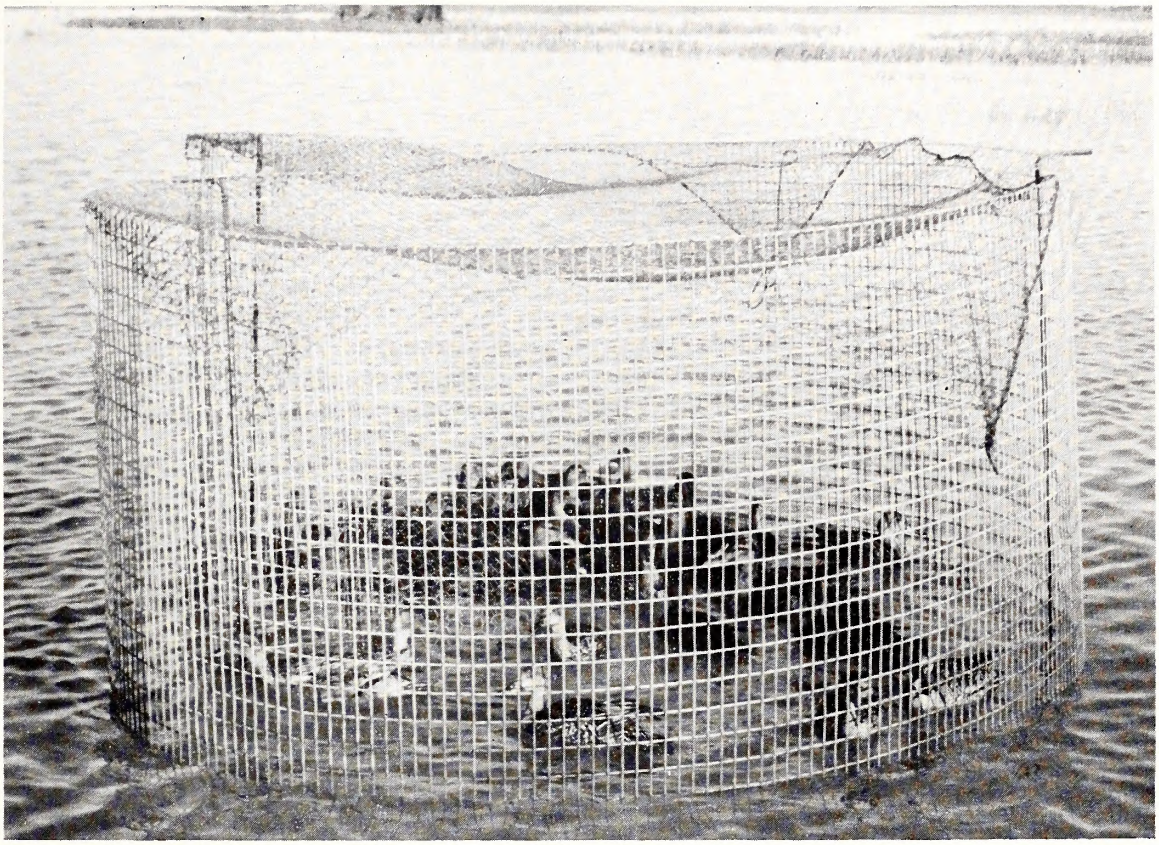

Ducks were trapped in "lily-pad" traps baited with wheat and corn. Entering the heart-shaped trap, they were unable to find their way out again. As many as seventy-four ducks were trapped in one day. Most of the ducks were pintails, although many black ducks were also trapped. Among the list of infrequent visitors to the traps were blue-winged teals, green-winged teals, mallards, and one redhead duck.

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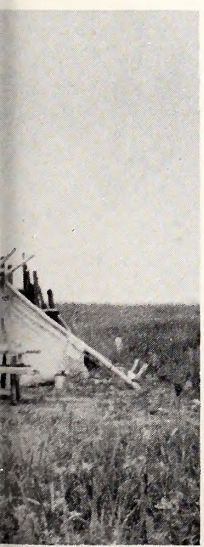
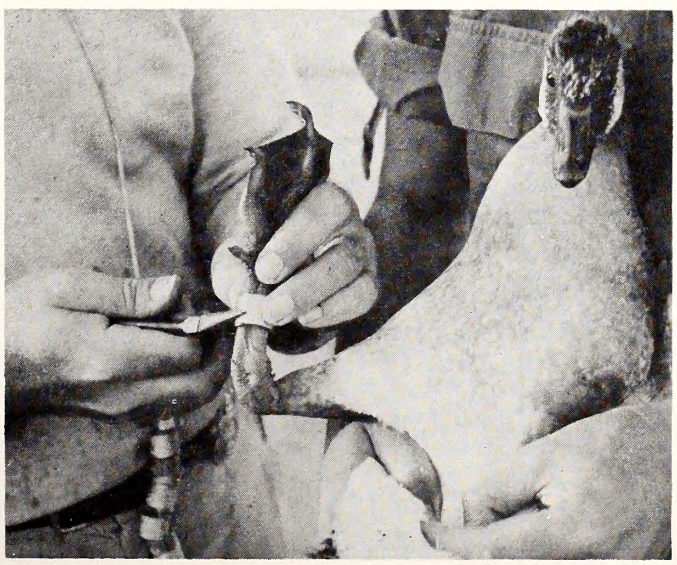
by Gene Hester

A young Canada goose, trapped on one of the off-shore islands, sprawls cooperatively in the arms of a biologist while a band is attached to her leg. Bands returned by hunters give biologists valuable information regarding waterfowl nesting sites. Right: Wings beating, a young pintail with a shiny new band on his leg takes off after being released.





SHOULD DOE DEER BE HARVESTED?

by Frank B. Barick
Chief, Game Division

Illustrations by Al Barrett

What is good conservation in one time and place may not be best elsewhere—as in the case of some North Carolina deer.

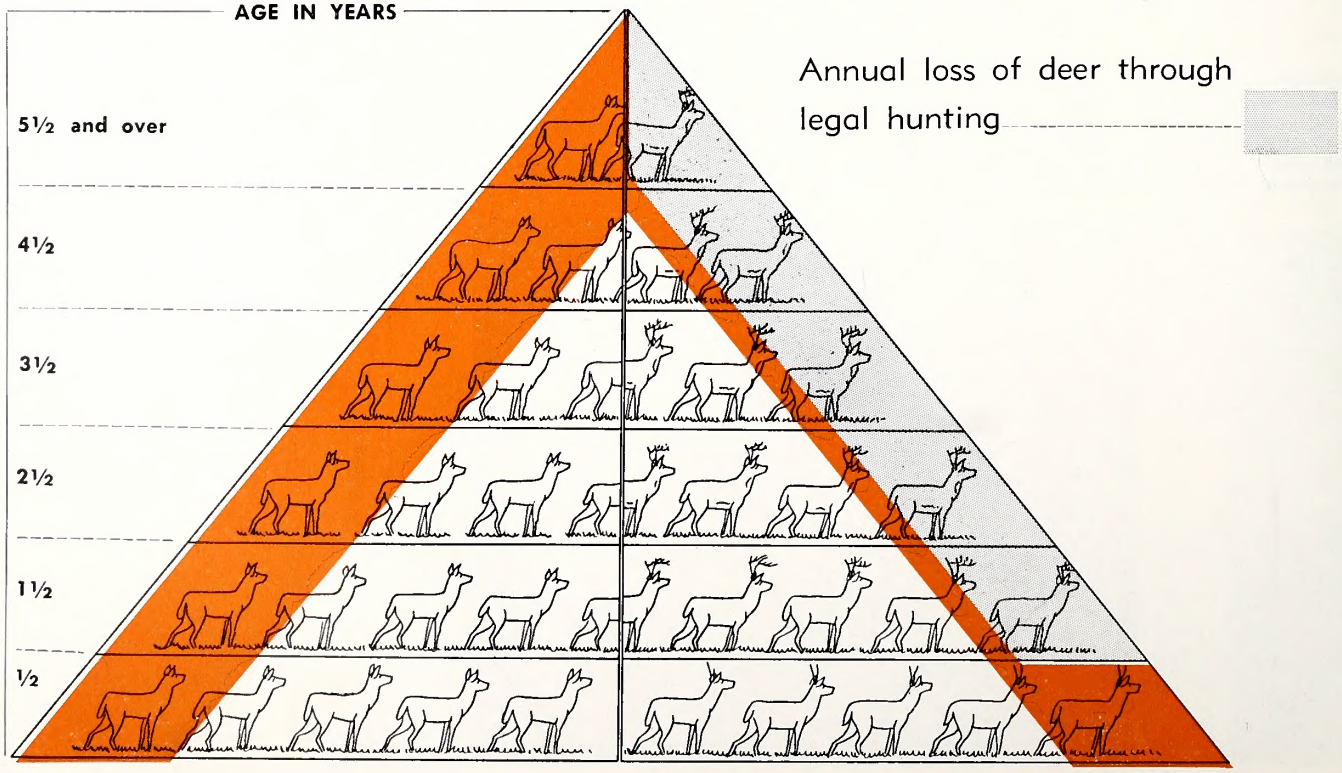
The question of shooting doe deer is a serious problem. It is a serious problem not only in this state but in other states as well. It is a serious problem wherever there has been a successful deer restoration program. It is a serious problem wherever conscientious thinking sportsment concern themselves with wildlife mangement, as they properly should. They foot the bill for management and regulation; they are the primary beneficiaries; they should be concerned with regulation of the harvest.

Regulation of game harvest is a complex subject with biological, social, legal, and traditional aspects. This article will deal with part of the biological aspect of doe deer harvest.

The underlying principle of game harvest regulation is based on very simple logic. It is merely that we should harvest only the "annual surplus." Surplus of what? . . . the surplus over the required brood herd. It is the same as in farming. The man who wishes to produce and market 80 hogs per year needs only five brood sows and a boar—assuming two successful litters of eight pigs per sow per year. The five sows and the boar are his broodstock, the 80 pigs his surplus which is harvested. If he is geared to this size operation he does not have facilities to handle and feed any more. He could not think of selling only the barrows and saving all the gilts because if he tries to breed more sows using the same amount of space and feed, the over-crowding and reduced amount of feed per

These two diagrams illustrate in a general way the two different approaches to deer harvest by "buck law" and "hunter's choice" hunting. The pyramid shape of the diagram represents the fact that the largest proportion of the population is normally composed of young animals and that successively older age classes have fewer and fewer animals. The brood stock portion of the population pyramid is the same size in each case, indicating that in an area populated at capacity, fall and winter drain brings the spring population back to a base level whether hunting is by buck law or hunter's choice. The shaded and colored portions represent the deer

LEGAL HARVEST OF BUCKS ONLY



head would reduce his litter size. It might well reduce the average litter size so far that he would be raising fewer than the 80 he was able to raise with proper facilities. He also runs more danger of disease and parasites from attempting over production with limited facilities.

Producing deer involves the same basic principle of feed and surplus, but the productivity is somewhat lower. Whereas the statewide average is about eight or nine pigs per sow twice a year, the statewide average for deer is only about one or two fawns per doe per year. If they are not crowded they will average up to two fawns per doe; if they are too crowded they may average less than one fawn per doe. That is, many does will be barren. Some will be barren because they are not bred; others will be barren even if they are bred, if they do not have enough of the right kind of food the embryos are resorbed into the body tissues.

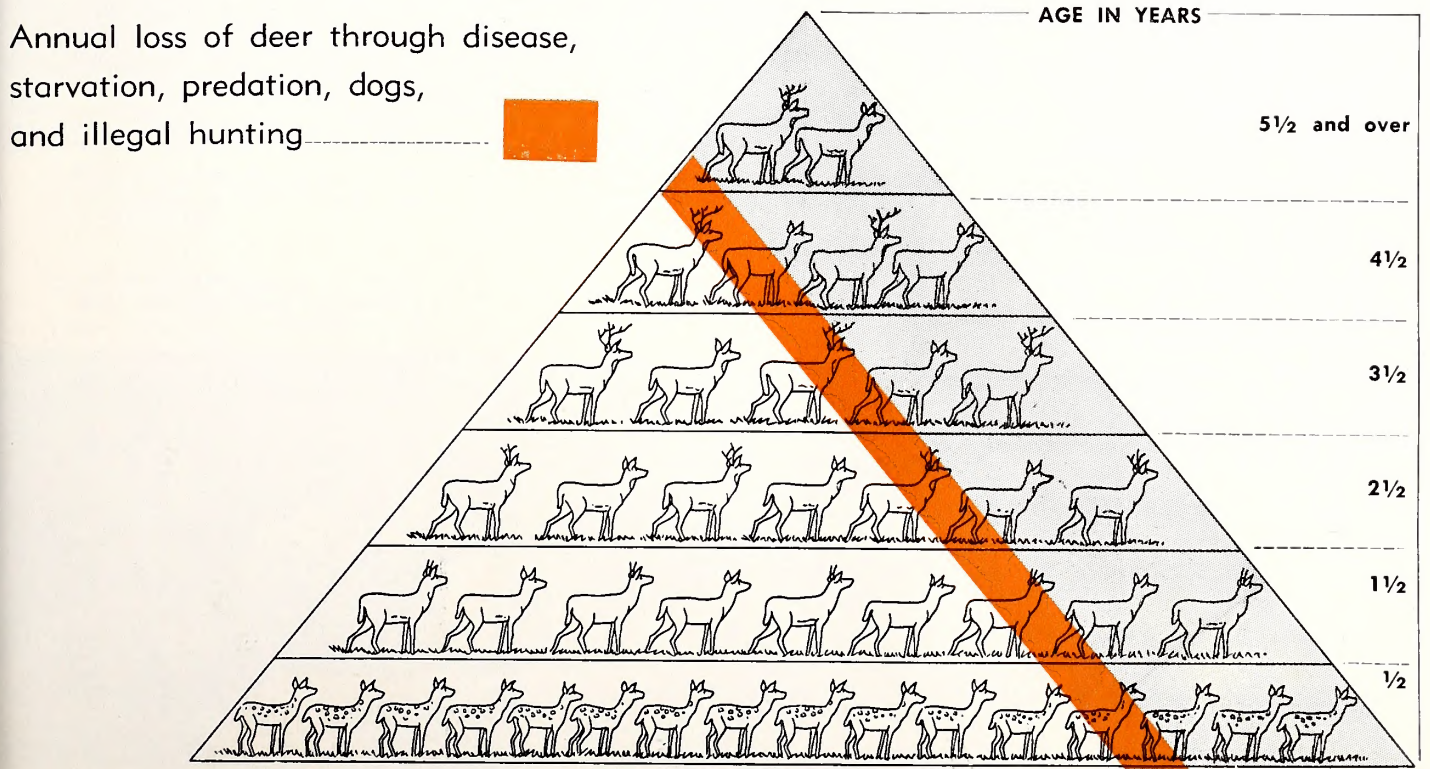
Under normal conditions of fair to good range, and no overcrowding, production of 1.5 fawns per doe will result in a 25 percent herd increase per year. If none are removed the herd would double in size every three years. For example: starting with 100 deer there would be 125 after the first fawn drop, 156 after the second, and 195 after the third. We come very close to attaining this rate of increase on our restocking areas where "full" protection is afforded.

Deer herds are kept in balance with their range by: 1) legal harvest, 2) illegal harvest, 3) stray dogs, 4) natural enemies. On wildlife management areas such as Pisgah, Mt. Mitchell, Uwharrie, and others, the state-employed wildlife protectors keep natural enemies, stray dogs and illegal harvest under control by their constant patrol of the area. This means that the primary drain on the population is the legal harvest.

We do not wish to imply that no deer are lost on these areas except by legal harvest, but we can rightfully claim that *most* of the deer which are removed from the herd are harvested by the sportsmen. Perhaps 75 percent of the drain on the population is by legal harvest and only 25 percent by the three other factors. In some unprotected areas the proportion is no doubt reversed—or close to it. We have evidence that in some sections stray dogs take more deer than the licensed hunters. Between these two extremes we have various grades. For example, on some club-leased lands illegal kill is held to a minimum, productivity is high, and herds are on the increase. In other sections a combination of all four types of drain is reducing the herd faster than it can reproduce itself. The drain is eating

removed from the population each year. Just as in the case of the brood stock, about the same number of deer are removed each year regardless of the type of hunting. The difference is that at this stage of the population the buck law allows only the harvest of a small part of the removable surplus. The rest of the surplus is taken illegally and by predators and disease. Under the controlled doe harvest system most of the surplus is taken legally and there is relatively little waste due to other drains. In a stabilized-capacity deer herd, the total deer population equals the brood stock plus the annual surplus. The annual surplus equals the legal kill plus the illegal kill plus the predator kill plus the disease kill plus starvation kill. Good management puts as large a portion as possible of the annual surplus into the hunter's bag.

CONTROLLED HARVEST OF BUCKS AND DOES



into the broodstock; *more* than the normal surplus is being taken; the herd is decreasing.

It is therefore obvious that deer populations vary from one part of the state to another. We have areas which have been "over protected" and areas which have been "under protected" and we have areas where the harvest has matched the surplus.

Now let us examine a little more closely the nature of some of the "drains" mentioned above. One of the most significant differences between legal harvest, as we have practiced it to date, and the other "drains" on the population is in regard to sex. Legal harvest to date has allowed the removal of male deer only. The other three drains siphon off equal numbers of both sexes.

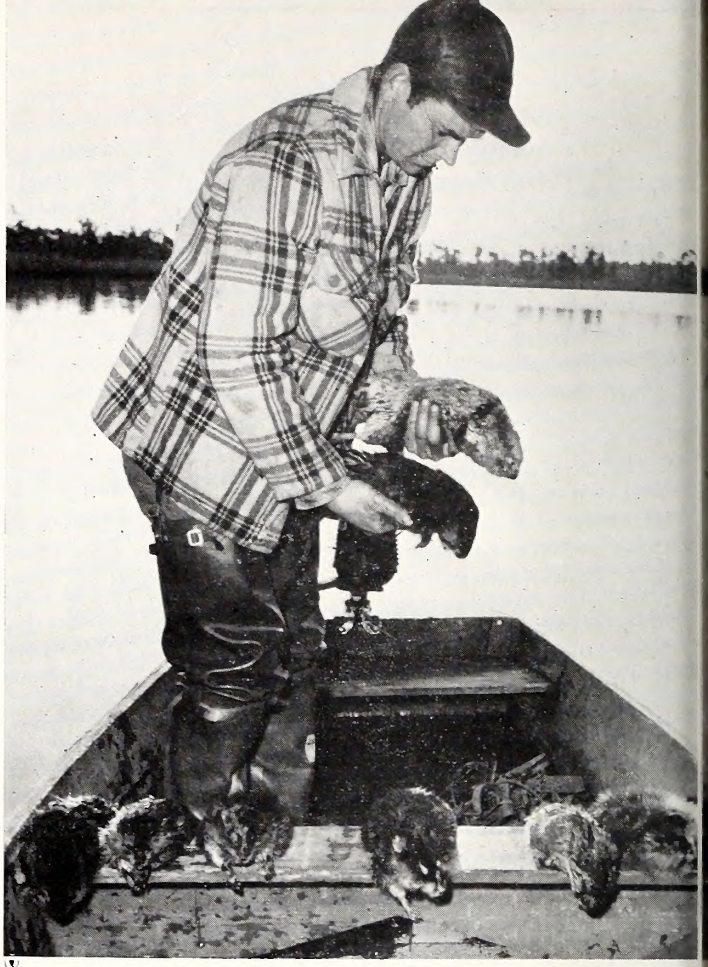
This is especially significant on protected areas, whether they are government controlled or privately controlled. On such areas there is a tendency to build up a disproportionate population of doe deer —unharvested and unharvestable stock. This is fine up until the range is fully stocked—but once this point is reached it is impossible to continue to increase the rate of production beyond this point. To attempt to do so by failing to harvest the doe is impractical and wasteful. This is why we said earlier that harvesting doe deer becomes a serious problem wherever there has been a successful deer restoration program.

The logical solution, therefore, is to modify the regulation so as to allow the harvest of both sexes not only to hold the population within the carrying capacity of the range, but also to prevent the waste of this resource. As with the hogs, only so many animals can be raised to maturity with a given supply of food. If we produce more they will starve or be so weakened as to fall easy prey to predators and other natural enemies.

This principle has been demonstrated over and over again in other states. It was first realized in the northern states where heavy winter snows cover most of the food so that only the larger deer can feed by reaching up high on the brush to browse on what is left. This, of course, results in large numbers of starved fawns. The same principle applies in the south but on a modified scale. We may not lose our fawns and doe deer to snow but we lose them nevertheless. We lose them to dogs, wildcats, and disease—as well as starvation.

As a result of an effective restoration program we have now reached the point where it will be necessary to harvest doe deer on certain areas if we are to prevent waste of stock and deterioration

See DOE DEER Page 23



3. Grip the tail and the skin on the backside and pull in opposite directions.

7. With the front free, hold the carcass and peel the skin from the underside . . .

HOW TO SKIN A MUSKRAT

Photo Feature by Jack Dermid

Carol Yarnes of Currituck county is an experienced trapper. He has caught and skinned thousands of muskrats in the vast marshes near his home and has learned how to skin them with remarkable ease and speed. At left, he has just returned to the boat landing with the day's catch. It looks like a big skinning job ahead, but each rat only requires about a minute of his time. Let's watch him skin one.

Farm boys and girls will profit by studying each step carefully, for they need only to take advantage of the muskrat crop being produced annually along streams and ponds in their communities to earn extra spending money. They may even hit the jackpot by catching a mink or possibly an otter. Trapping is a wonderful outdoor hobby. It is one of the best ways to learn about wildlife and animal signs and to gain a real appreciation of the values of conservation. With the exception of the skinning operation, it is mostly fun; but Carol's technique takes most of the drudgery from that. Besides, proper skinning and care of pelts is important in getting a top price.

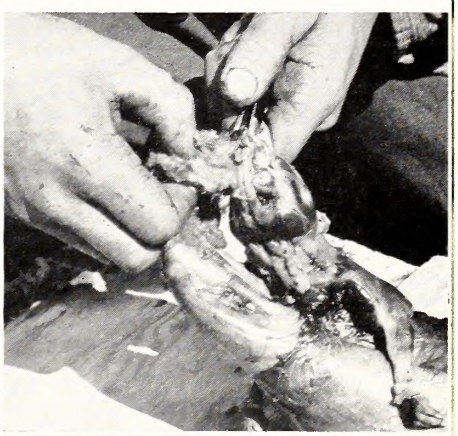
Muskrats produce a valuable crop each year in North Carolina. During the 1954-55 season, 77,844 pelts were sold at an average price of $1.40 each for a total of $108,981. Anyone interested in furs and trapping can obtain a copy of the Commission's new booklet, *Fur Resources of North Carolina,* by Kenneth A. Wilson, upon request from the Raleigh office.

1. Cut around the ankle and down the back edge of each hind leg to the . . .

2. . . . base of the tail. Pinch up the skin and sever it from the tail.

4. With the skin peeled from the back only, push the head and shoulders out.

5. Pull out eaeh front foot as shown and from around the skin at the ankle.



6. Now carefully cut the skin away from the ears, eyes, mouth, and nose.

8. . . . using great care in this tender region to prevent tearing the flesh.

9. Here is the pelt, reversed purposely to show the fur. Finally the pelt . . .

10. . . . is placed inside-out on a wire stretcher, bits of meat and fat removed, and hung up to dry.

Our National Emblem

The Bald Eagle

by Lunette Barber

There is not a chance for the history lesson to become dull or uninteresting with spiced facts to add, such as the story of the bald eagle.

By the time November comes around on the school calendar with the observance of Armistice Day and Thanksgiving, many boys and girls throughout North Carolina have studied about the settlement of the thirteen colonies. They have learned that the colonies won their independence and became states with the favorite general becoming the first president, and each has heard that Betsy Ross made the first flag. But how many know about the national bird?

The bald eagle is our national bird and has been since 1782. It was chosen by Congress at that time as the emblem of the United States. The eagle appears on the Great Seal of the United States, the President's Flag and Colors, coins, currency, some stamps, military insigna, some state flags, and some of the Cabinet flags.

The bird was not chosen unanimously—Benjamin Franklin insisted that the wild turkey be selected because it was native only to America. Since the Revolutionary War had just been won, he thought it most appropriate that the wild turkey should be the emblem. A vote was taken; the eagle won by a single vote majority.

The bald eagles do not like to wander far from rivers, lakes, or seashore. They are flesh eaters and like fish very much, but are not very good fishermen. They much prefer to chase the ospreys, or fish hawks, and rob them of their catch. Down through the years reports have been circulated that eagles have picked up babies, young lambs, calves, and other domestic animals, but these are false because the bird is incapable of lifting in flight an object that heavy. Eagles return to the same nest each year with the same mate. The nest is called an aerie. It is built on a cliff or tree top where there is a wide view, and is made of dead branches and lined with grass and leaves. Each spring new sticks and lining are added so that the nest increases in size from three feet to as much as eight feet in width and depth. One eagle nest was observed to have been used continuously for 35 years. The male and female share responsibility of rearing the young. When hatched, the eagles are covered in white down. After a few weeks they put on dark brown plumage. The adult bird's feathers are dark brown, except for white tail feathers and white feathers on the head and neck. The white feathers do not appear until after the bird is three years old.

An Act of Congress in 1940 gave the bald eagle protection within the continental limits of the United States, and persons taking, possessing, or dealing in bald eagles are liable to fines up to $500, or imprisonment up to six months, or both.

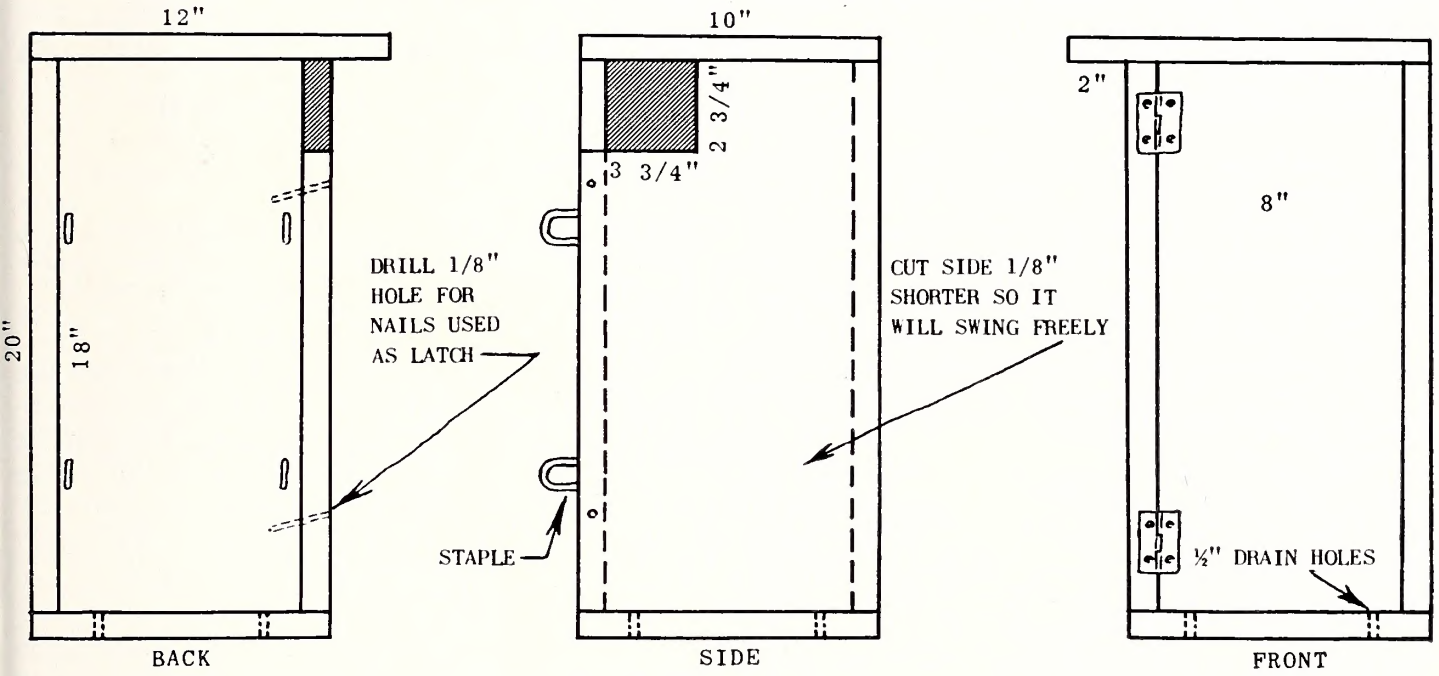
Eagles are found chiefly in this state in the Coastal Plain, but are occasionally seen in the Piedmont and mountains. Last year an active nest was reported as far inland as the vicinity of White Lake.

As was said in the beginning, study the eagle. It is one of the most interesting birds we have. One of the favorite stories about the eagle may be found in *Compton's Encyclopedia*—"The Story of Old Abe—the War Eagle." It is true. Also teach the children to be thrifty and not spend all the eagles they carry in their pockets—those on the twenty-five cent piece and the "old" fifty cent piece. Perhaps the eagle is circulated by Americans much more than the flag is flown.

SQUIRREL NEST-BOX PROGRAM

Recent hunter-success reports have indicated that the gray squirrel is one of North Carolina's most popular game animals. In an effort to further increase their numbers, the Wildlife Commission is sponsoring a program to improve squirrel habitat through the building and mounting of squirrel nest boxes.

Groups and individuals participating will be reimbursed for their efforts with cash payments from the Commission. The squirrel box shown below is one type that is being built in the program. Further information can be obtained by writing "Squirrel Nest-Box Program, Box 2919, Raleigh." Deadline for applications is December 1, 1955.



BACK, FRONT: 8x18" BOTTOM: 10x10" HINGES

SIDES (2): 10x18" TOP: 10x12" STAPLES

This diagram shows the approved squirrel nest-box to be built from rough lumber. Inside dimensions are 8 x 8 x 18″. The box is to be attached to the tree by means of wires running around the tree from two pairs of staples. The wires should be crimped so that the tree can continue to grow.

NEW WILDLIFE FEDERATION OFFICERS

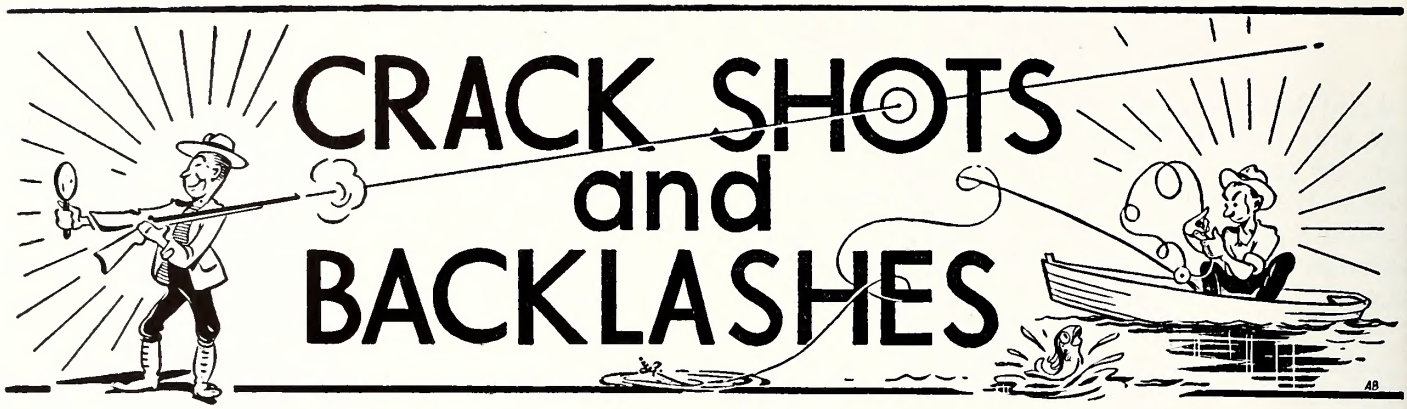
Newly elected officers of the North Carolina Wildlife Federation are shown at the close of the annual meeting, held this year in Rocky Mount. Left-to-right are J. W. Morphis, Jr. of Lexington, Treasurer; Turner W. Battle of Rocky Mount, Vice President; Ralph Daniels of Durham, President; Macy Hoyle of Smithfield, Secretary; and E. B. Hampton of Winston-Salem, Vice President. Not shown are Fred Gray of Asheville, Vice President, and Maj. J. L. Murphy of Kill Devil Hills, Delegate to the National Wildlife Federation.

Photo by Jim Lee

LAKE JAMES from page 9

cedures more than doubled the output of the lake so far as game fish are concerned, after years and years of continued stocking had failed to be of help.

Of course, these procedures cannot be put into effect in every situation. The extensive drawdown is not economically desirable when power production is the main purpose of the reservoir. In this case it was a necessity which naturally was of benefit to the fish population. The application of the best known management methods will be entirely futile unless the water conditions are suitable for game fish. Muddy reservoir basins, and waters polluted with silt or with industrial or organic wastes cannot be made to produce game fishing by any known method. Modern management methods will not help. Stocking will not help. But today Lake James is an excellent demonstration of the fact that given clean water and good habitat conditions, modern fish management methods can produce good sport fishing.



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Met a fellow the other day who said he had always wondered what kind of a character conducted the section in the back of this magazine under the heading "Crackshots & Backlashes." He walked away without saying whether or not he was pleased or disappointed. Well, no sense in being modest if you haven't got anything to be modest about.

Comes Thanksgiving Day the biggest army of hunters in history will take to the fields and woods after quail, rabbits and wild turkey. We have been making that statement every year for the past six or seven years, but the truth of it is borne out by an increase in license sales—each year topping the preceding one in total licenses sold. To greet the hunters, as in years past, there will be the usual expanded staff of law enforcement officers including all male personnel of the Commission. One nice thing about tramping the woods and fields all day in search of violators, it gives you a wonderful appetite for Thanksgiving dinner.

Before this, however, comes the opening of the waterfowl season on November 7. Federal boys say there will be more birds this year than for the past couple of decades. The increase in birds is reflected in a longer season, but no increase in bag limits will be allowed.

There is much concern as to whether three or four hurricanes blew enough salt water into Currituck Sound and other waterfowl areas to destroy waterfowl food. It is yet too early to determine the extent of damage. Except in local areas it is doubtful if the hurricanes did serious damage to wildlife populations. Everyone agrees, however, that the hurricanes didn't do any good.

There are some mighty fine people in this world. Take, for example, T. G. Stem, Oxford, who writes:

"For some time I have been receiving WILDLIFE, which I have enjoyed very much. I suppose I have been receiving it because I happen to be Attorney for the Board of Commissioners of Granville County. I notice that it has been addressed to "County Attorney."

"I desire to make a small donation to WILDLIFE and am glad to enclose herewith my check for $5.00.

Very cordially yours,
T. G. Stem
Oxford, N. C."

We couldn't accept Mr. Stem's check, but we suggested that he give us permission to send WILDLIFE to the Masonic Orphanage at Oxford. This he agreed to do. So, for the next two years the youngsters there will receive five copies. Mr. Stem received this letter from Mr. A. D. Leon Gray, Superintendant of the orphanage:

"Dear Mr. Stem:

"We are most grateful to receive a subscription of five copies for two years of 'Wildlife in North Carolina', knowing that this will add greatly to the opportunity for enrichment of our boys and girls."

Once in a while you pick up a really quotable quote. We don't know the origin, but Senator Scott used it last August in addressing a group of people attending a Cape Fear River Basin Development rally at Avents Ferry Bridge. The quote: If you take a boy fishing you won't have to go hunting for him!

"Dear Sir:

"I am neither hunter, fisherman nor rabid ornithologist, but I would be interested in having your reaction to the following.

"Pinehurst, as you perhaps know, is an area heavily planted to thick shrubbery and trees, and is consequently a bird's paradise. Cardinals, catbirds, thrush, thrashers, robins, etc., nest in all parts of the town. In my own small grounds, and within less than a hundred feet of the house, I had all these birds to raise one or more broods last year, and they were back with some additions, this year. Quail breed in the woods near my house; at least three nests within hearing, this year, and in the late winter they come into my back yard for feed which I keep supplied to them.

"However, I have been saddened each year to see the mortality among these desirable neighbors, at the hands (or beaks) of the bluejays. To my knowledge, and in spite of a continuous war against them, they killed the young from four nests in my own grounds. In three of these instances, I actually witnessed their acts. There are literally hundreds of these murderers in the town, and I have no doubt that each adult accounts for at least one brood of more desirable birds every year. They either eat the eggs or the young; it doesn't seem to matter to them. I have

found two quail nests this year, in which were the punctured and broken shells, stained with the yolks. I have no doubt but that the jays were the culprits.

"I have never noted that game conservationists have observed or appreciated the havoc caused by these birds, and I am wondering if their guilt is generally recognized. Also, I would be interested in knowing what can be done about it. If you have any suggestions, I would greatly appreciate having them.

Yours very truly,
R. E. Wicker
Pinehurst, N. C."

Seems that bluejays, like the poor and flies, we have always with us. Conservationists have given them some recognition since they are not protected by the law other than city ordinance or sanctuary rules. Local control may be necessary, but few would recommend wholesale slaughter. The rascals are hard to kill.

"Dear Sir:

"Your article dealing with pollution of streams and rivers is most interesting and constructive.

"We have only to look at the French Broad, Tuckaseegee, and Pigeon rivers to see what havoc is being caused by pollution.

"There are hardly any good fish left in these streams, and the waters therefrom are unfit for irrigation or stock.

"It is high time definite steps be taken to correct this condition, rather than to hide our head in the sand like the article, for we'll never "get our corn bread made" just by talking about it.

Yours very truly,
Thomas D. Westfeldt
Fletcher, N. C."

Our streams will be running sores on our land as long as the People allow the condition to exist.

"Dear Sir:

"I am enclosing a picture of a blue bream, caught in Bennetts Creeks, July 27, 1955, with a hook and line. It measured 12 inches long and weighed 33 ounces, (2 lbs. 1 oz.).

"I entered the fish in the contest Sears is sponsoring and he was the largest bream brought in, and is still ahead. It caused such an uproar around here I thought you might be interested in it too. They say he is the largest blue bream ever caught in North Carolina waters. I must have hooked the granddaddy of them all.

Yours very truly,
W. M. Kennedy
Sharpsburg, N. C."

Congratulations on the bream and the prizes. Sorry, we couldn't use the pictures. WILDLIFE rarely uses dead fish or dead game pictures unless they are unusual or illustrate a point. Pix submitted must be of sufficient quality to make a good 120 screen engraving. If they are less than three and one-half inches wide, send the negatives. Our art editor is a hard man to please.

As a result of a meeting of State agencies involved in the prevention and control of forest fires, Clyde Patton, Executive Director of the Wildlife Resources Commission, offered the following services to the general welfare of the State:

"In the Wildlife Protection Division there are around 140 people scattered throughout the State who can assist in the following ways:

"(a) When a fire is discovered, put it out if possible.

(b) If the fire has such headway as the protector cannot put it out immediately, secure help and report to the nearest forest ranger.

(c) Assist the forest ranger by handling traffic until a highway patrol arrives.

(d) Furnish the forest ranger, or the appropriate investigating agency, with any information he has regarding the person, or persons, responsible for the fire.

(e) Furnish the forest ranger with information as to the nearest water supply or dirt-moving equipment.

(f) Furnish forest ranger with information as to where food can be secured and drinking water is available.

(g) Use Wildlife Resources Commission radio equipment for sending and receiving messages for help.

(h) Keep unauthorized persons from the burning area.

(i) Help remove from the scene to a first aid station or hospital any person overcome by smoke or heat.

(j) Keep alert to discover ways and means for further cooperation with the Division of Forestry in their effort to prevent and suppress forest fires.

"In addition to the cooperation we can offer through our personnel, we can also make available our airplane with pilot, a limited amount of heavy equipment including bulldozers and tractors, along with our radio-equipped motor vehicles in forest fire emergencies.

"The Wildlife Resources Commission's Education Division through its publications, radio programs, television programs, youth group and school programs can call attention to ways and means of fire prevention."

AIR BOAT ON THE CAPE FEAR

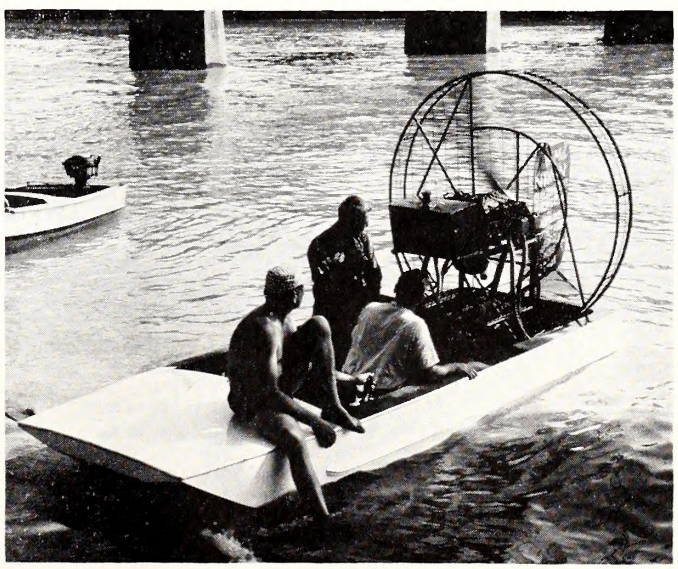


Photo by Rod Amundson

A new machine on the waters of the Cape Fear was displayed recently by W. M. Nixon of Sanford. Powered by a 65-h.p. airplane engine, the flat-bottomed air boat is steered with a rudder immediately behind the propellor shown spinning here.

"Recorder's Court Judge A. R. Wilson reminded Durham hunters and anglers yesterday, in a Durham newspaper, that the new combination hunting and fishing licenses became due August 1, and may be obtained at all sporting goods and hardware stores selling such licenses.

" 'This is just a reminder, because I don't want to have to fine anybody for failing to have the proper license if they should happen to get caught by a wildlife protector,' Judge Wilson said.

"He also said that establishments handling the licenses also have a quantity of copies of the wildlife rules and regulations."

We borrowed the above item from the Durham Herald. By the way, Judge Wilson makes this admonition each year—a good example to be followed. Ignorance of the law just plain isn't any excuse.

"Dear Sir:

"I am glad to hear that some one has given skin diving a plug. Many thanks to Mr. Henry A. Nichols of Santa Ana, California.

"I might mention to any of you still doubtful fishing skeptics that if you are up in the general vicinity of Richmond, Virginia, you should see Watt Dotts of the Undersea Explorers Club at 1806 Hanover Avenue, Richmond 20, Virginia. He should give you some good pointers on skin diving if you are interested. We have some more plugs from knowing fishing enthusiasts.

Yours truly,
Frank Hancock
Scotland Neck, N. C."

"Dear Sir:

"I have just received my September issue of WILDLIFE IN NORTH CAROLINA, and noticed that my subscription expires next month. Enclosed is one dollar for a two years renewal.

"In some way I would like to compliment the entire Editorial Staff and the best way that I know to do it is to say that if your present policies are continued it will please me very much for I really enjoy reading it.

Yours truly,
R. Fred Long
Fayetteville, N. C."

"Dear Sir:

"The picture on the inside cover of the September WILDLIFE, "Long-billed Marsh Wren" by Robert B. Dance is fascinating. Would you please send me a color reprint of this picture if they are available.

Sincerely yours,
Hattie S. Byrum
Home Agent
Edenton, N. C."

No color prints available. Artist Dance made the original with pen and ink. We liked it too.

"Dear Sir:

"Will you please send me a copy of the December, 1920 National Geographic magazine at your earliest convenience.

Thank you,
C. V. Harris
Winston-Salem, N. C."

This one has us stopped, but maybe some of our wonderful readers can help. Mr. Harris' address is 318 South Cleveland Ave., Winston-Salem, but PLEASE let us know if you can supply him with a copy!

See by the papers that a 58 year old man was seriously mauled and gored by a tame deer in a national park. He was watching some youngsters feed it. To be that tame, the deer must have been a pet. Maybe someday people will stop trying to take deer for pets.

Photos by Jack Dermid

WHITE PERCH PAYOFF

When white perch are running in South Lake, one of Dare County's fabulous fishing spots, plenty of sport is guaranteed for all anglers, and if the technique of local fisherman Joe P. Noonan is used, a yard-long string is a sure bet. Joe rows slowly about in likely waters with a couple of cane poles rigged for action and hooks baited with shrimp. When the corks start bobbing, he stops and starts pulling in scrappy fish at a rapid pace. When biting becomes slack, he resumes "trolling" for another school. This big string—31 white perch and a flounder—is proof that his method works. And, incidentally, there is no creel limit on white perch in Dare and certain neighboring counties (see your 1955 Fishing Rules).

PROTECTOR OF THE MONTH

Vance M. Perry

Mr. Perry is one of the veterans of the Wildlife Protection Division, having been appointed Alamance County Protector in August of 1932. After serving Orange, Caswell, Guilford and Person counties, he came back to serve Alamance County and now resides at 419 Climax Street, Graham, North Carolina. Mr. Perry has not only served well as Wildlife Protector, but also has served his country well as a member of Battery B, 56 Coast Artillery during World War I and the citizens of Carolina Beach as a member of the Police Department.

Mr. Perry was born in Chatham County 55 years ago, and received his education in the Chatham County Schools. He attended Wildlife Protection Schools at Asheboro and Chapel Hill, North Carolina. Mr. Perry is married and the father of two fine children, a girl and a boy, who have both finished high school.

IT'S THE LAW!

Question: How long must a person live in North Carolina before he is presumed to be a resident of North Carolina for the purpose of issuing hunting and fishing licenses?

Answer: Section 113-156 of the General Statutes of North Carolina states: "All persons who have lived in this state for at least six months immediately preceding the date of making application for a license, shall be deemed resident citizens for the purpose of this article."

ENFORCEMENT RECORD FOR AUGUST

The following is a tabulation of the enforcement activities of the Wildlife Protection Division during the month of August, 1955:

Persons checked	21,199
Total prosecutions	283
Total convictions	275
Total fines collected	$1,473.00
Total costs collected	$2,087.35

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the Wildlife Resources Commission or its personnel.

DOE DEER

from page 16

of the range. The situation is becoming especially critical on Mt. Mitchell and Pisgah. If our present level of effective management continues other areas too will require doe harvest. This will be necessary even though we have increased food supplies on these areas by special timber operations, browse cuttings, and pasture planting. It is a result of normal growth and a sign of successful deer production.

It is for this reason that the Wildlife Resources Commission and the United States Forest Service have jointly endorsed a policy of requesting the next legislature to grant the Commission authority to regulate the taking of doe deer where and as the situation warrants. This does not imply a statewide or seasonwide doe season. The doe season would be opened only on those areas where it is necessary to harvest the surplus doe deer and only for the length of time necessary to accomplish this harvest. It could, for example, take the form of a one or two-day doe season on a few restricted areas such as Mt. Mitchell and Pisgah. As time goes on, it may be desirable to extend this system to other areas which have attained saturation populations.

As mentioned above, this article represents only a small phase of this problem. Other articles will be published from time to time setting forth additional facts which must be kept in mind in order to effect proper management of this valuable resource.

". . . a great unwritten compact exists between the dead, the living, and the unborn. We leave to the unborn a colossal financial debt, perhaps inescapable, but incurred, nevertheless, in our time and for our immediate benefit. Such an unwritten compact requires that we leave to the unborn something more than debts and depleted natural resources."

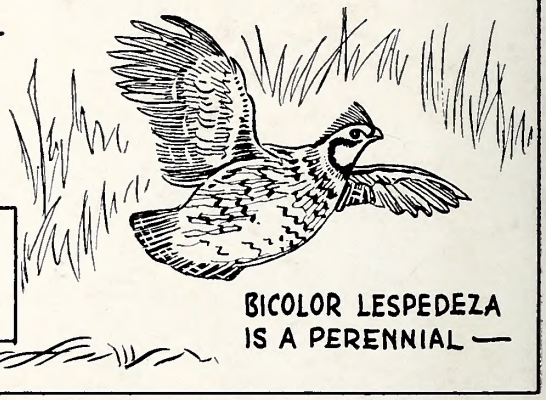
Supreme Court of Washington State vs. Dexter, 32 Wash. 2nd 151

THE N.C. WILDLIFE COMMISSION IS PREPARED TO DISTRIBUTE FREE MORE BICOLOR LESPEDEZA AND MULTIFLORA ROSE THAN EVER BEFORE. NOW IS THE TIME FOR LANDOWNERS TO DECIDE WHAT AREAS OF THEIR HOLDINGS NEED WILDLIFE FOOD AND COVER PLANTS AND GET APPLICATIONS FROM PERSONS LISTED BELOW.

BICOLOR LESPEDEZA

FIELD BORDERS PREVENT ENCROACHMENT OF WOODS — PROVIDE GAME COVER AND FOOD — AND ALSO CHECK EROSION

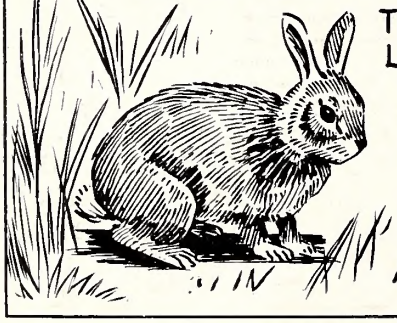
SEEDS FALL ALL WINTER TO GIVE GAME NEEDED FOOD



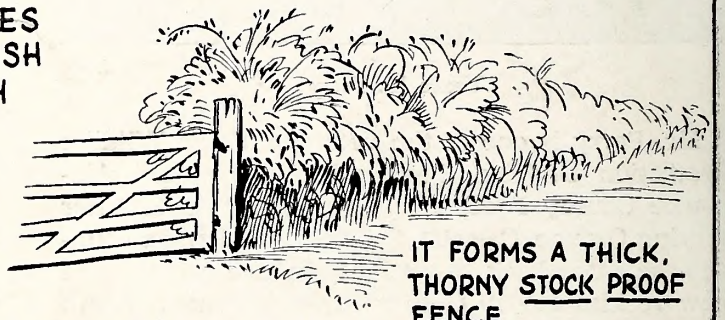
BICOLOR LESPEDEZA IS A PERENNIAL —

MULTIFLORA ROSE

PROVIDES COVER AND TRAVEL LANES FOR GAME. SEEDLINGS ESTABLISH THEMSELVES WITH LITTLE CARE.



A DECORATIVE FEATURE, TOO!



IT FORMS A THICK, THORNY STOCK PROOF FENCE

AL BARRETT

DISTRICT	BIOLOGIST	ADDRESS	COUNTIES
1	William A. Goodson	905 N. King St., Windsor	Bertie, Chowan, Dare, Hertford, Martin, Perquimans, Washington, Camden, Currituck, Gates, Hyde, Pasquotank, Tyrrell
2	Edward J. Larimer	213 King St., New Bern	Beaufort, Craven, Greene, Lenior, Pamlico, Pitt, Carteret, Duplin, Jones, Onslow, Pender
3	Charles B. Woodhouse	Holly Springs	Edgecombe, Halifax, Nash, Vance, Warren, Wayne, Wake, Wilson, Franklin, Johnston, Northampton
4	Sam F. Poole	Rt. 1, Box 465, Lumberton	Bladen, Columbus, Harnett, New Hanover, Sampson, Brunswick, Cumberland, Hoke, Robeson, Scotland
5	Charles Hill	28-D Brookwood Garden Apts., Burlington	Alamance, Chatham, Granville, Lee, Person, Rockingham, Caswell, Durham, Guilford, Orange, Randolph
6	David L. Taylor	Box 901, Albemarle	Anson, Davidson, Montgomery, Richmond, Stanly, Cabarrus, Mecklenburg, Moore, Rowan, Union
7	Ted R. Mitchell	Box 84, Statesville	Alexander, Ashe, Forsyth, Stokes, Watauga, Yadkin, Alleghany, Davie, Iredell, Surry, Wilkes
8	Edward R. Smith, Jr.	Route 2, Box 19-B, Morganton	Avery, Caldwell, Cleveland, Lincoln, Mitchell, Yancey, Burke, Catawba, McDowell, Rutherford
9	Rex L. Bird	1619 Kensington Dr., Hendersonville	Buncombe, Clay, Haywood, Jackson, Madison, Swain, Cherokee, Graham, Henderson, Macon, Polk, Transylvania

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Wildlife in north carolina

DECEMBER - 1955

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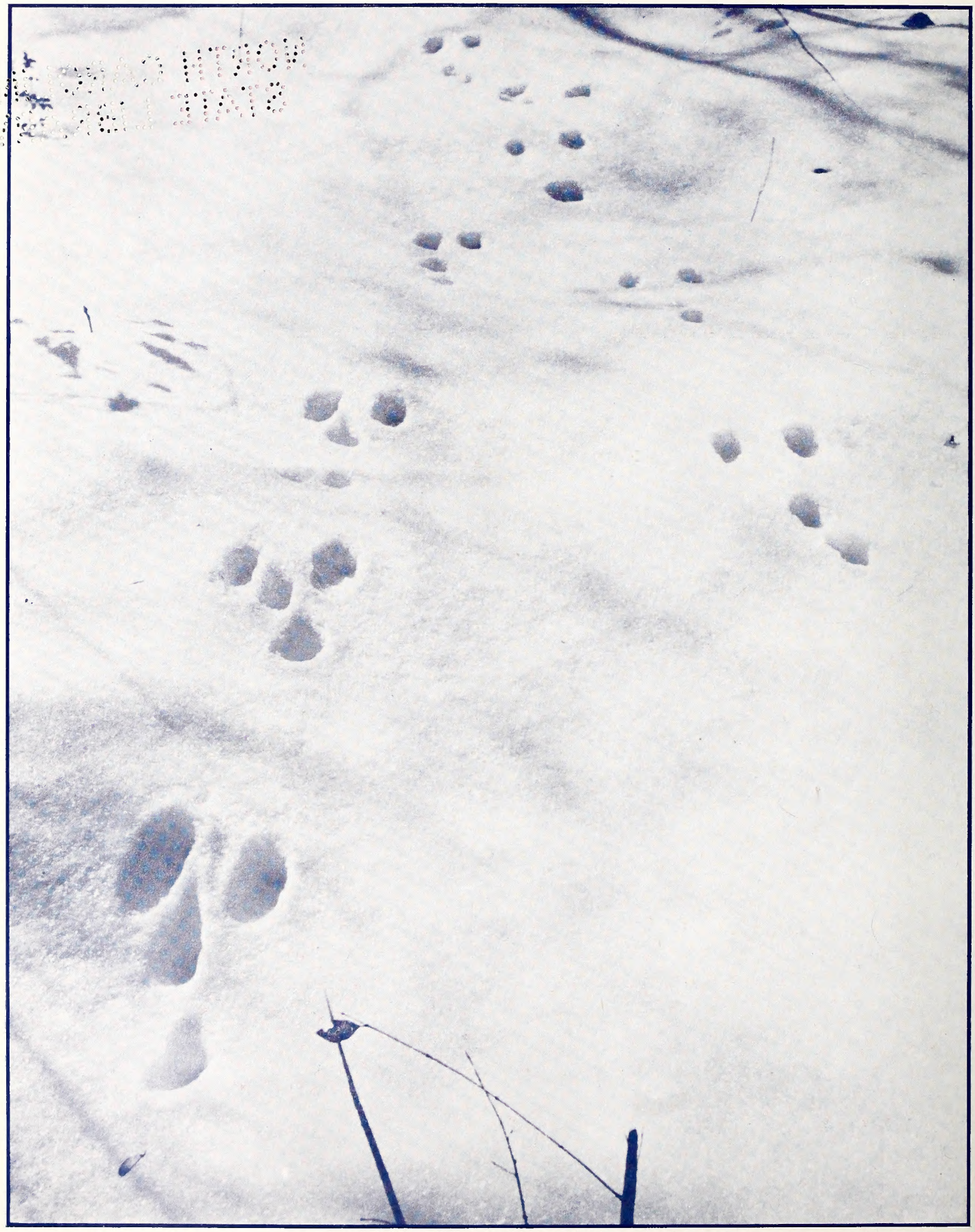

Photo by Jack Dermid

Where Rabbits Romped In The Moonlight

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

LUTHER H. HODGES
Governor

North Carolina Wildlife Resources Commission

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COVER

Out of bed hours before dawn, fortified with a tremendous breakfast, in the cold blind at sunrise after trudging across icy marshes, our nimrod is sound asleep when Mr. Mallard finally makes his appearance. Oil painting by Al Barrett.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

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Entered as second class matter at the Post Office at Raleigh, North Carolina, February 23, 1948, under the act of August 24, 1912.

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Careers in Conservation IV

CONSERVATION EDUCATION
In The Public Schools

Thomas D. Reynolds
Assistant Professor
Department of Education
Duke University

"He left this country better than he found it." This is the inscription that Gifford Pinchot saw on a tombstone in 1892 as he rode on mule back from Biltmore Forest to the Rhododendron covered Pink Beds in the Pisgah area of Western North Carolina. At the time Pinchot was working for George W. Vanderbilt on the first project of practical forestry in the United States.

For several years, a few people had been concerned about the terrible destruction of the natural resources of America. These few were beginning to realize that at least some of the vast resources were not limitless and that practices as being carried on then would eventually ruin the nation. Various steps had been taken by the federal government toward attempting conservation of certain of the resources, but little impression had been made on the public generally. Further, very little was known as to how to carry on conservation in this country which had been built upon freedom of action in the use of all resources.

The type of project that was carried on at Biltmore was one that was to prove so effective in establishing conservation practices in the years to follow. Pinchot was able to show through practical demonstration that it was possible to make use of a renewable natural resource and leave it better than he found it. This was unheard of in lumbering operations in America before this time.

Through the results obtained and knowledge gained in the projects in forests owned by Vanderbilt and the many other projects that were soon to follow in other forests, Pinchot was to become, in 1898, chief of the Forestry Division and leader of the conservation movement.

During the administration of President Theodore Roosevelt, it appeared that the conservation movement was to achieve great success. However, when Roosevelt went out of office in 1909, many of the gains were lost.

Not all of the loss of previous gains was due solely to the change of presidents. The fact that the problems of conservation were not well enough understood even by the leaders of the movement was one cause. It was a matter of getting the people ready to listen before the leaders knew the answers. It was not until later that the problem of soil conservation was even recognized, much less understood. Futhermore, the educational philosophy of that period was such that consideration of current problems was not thought to be a proper function of the schools. No real help could be secured through them at this time.

During the next several years, Hugh Hammond Bennett, who is a native of Anson County, North Carolina, and many others were beginning to understand the problems of conservation. Then, after some of our wildlife had already become extinct, when millions of tons of soil were being washed down our rivers, fire and man were destroying the forests, dust storms were carrying the soils of the west away, and the country was in the midst of a depression, many answers were available when Congress was ready to listen. It was then that the conservation movement was put on a sure footing so far as legislation is concerned.

In the years that followed the early 1930's, many states, counties, and cities, in addition to many private organizations took an active part in the conservation of natural resources. The number of career opportunities in fields related to conservation has increased rapidly. One especially important opportunity is in public school teaching.

Government agencies and other conservation groups have long recognized the importance of the schools in the establishment of wise use of our natural resources. To really be effective wise practices must be carried on by all and there is no better way to reach all the people than through the schools. By 1930, the philosophy of education had changed sufficiently for the schools to be able to give attention to current problems. Certainly conservation is a most important current problem. More than a small part of the success of the program during the past several years can be attributed to the work of teachers who have become sincerely interested in the problems of conservation. This year some 32,000 teachers are working with approximately 1,000,000 pupils in the schools of North Carolina. The number of teachers interested in conservation is not yet great enough but it is growing.

Much has been done in recent years to include conservation education in the school program. Government agency publications, educational jour-

nals, textbooks, and publications of private organizations have contained much on the teaching of wise use of our resources. Numerous teaching aids and materials have been developed. Some states have passed legislation requiring that certain aspects of conservation be taught in the schools. Numerous departments and agencies of the government have especially trained personnel whose services are available to the schools. In the southeastern states, a special program, Resource-Use Education, has been established in connection with the conservation education of the region.

The Resource-Use Education Commission in North Carolina was appointed in 1945. The program was designed to increase the emphasis on the conservation and development of the natural, social, and human resources in schools and communities. A second purpose has been that of channeling the results of current research on resources to the schools. It has been helpful in bringing resource specialists, educational leaders, and laymen together in planning and developing means for improving the school program. Resource-Use Workshops have been held in a number of the colleges of the state, and special conservation instruction has been included in several of the courses in teacher training which are offered by the colleges.

It has been found that the best results in conservation education are usually obtained not by setting up new courses in the already crowded curriculum, but by integrating conservation instruction with other subjects already offered. It has also been found that conservation education should be carried on at all grade levels and should be taught in city schools as well as rural schools. Agriculture classes have no monopoly on conservation instruction. Teaching wise use of resources begins with the community in which the pupils live. It cannot be taught from a universal text but makes use of an understanding of first the local resources, then the state, national, and world resources. If you are interested in conservation and wish to make teaching a career, there will be ample opportunity for you to teach conservation no matter what grade level or subject you may choose to teach.

The teaching of conservation of our natural resources lends itself to outdoor activities. Some of the types of activities that are being carried on at present by the schools are: outdoor camps, one of which was described in the February, 1955, edition of WILDLIFE IN NORTH CAROLINA; development and use of nature trails; activities developed through children's museums; and work in school forests and on school grounds. No longer is it thought sufficient to secure just enough land to contain the buildings when school sites are selected. Often fifty or more acres are bought in a location that will be suitable for use as outdoor laboratories.

Teaching opportunities in North Carolina have improved greatly during the period 1935-1955. The present state salary scale provides for a beginning salary of $270 a month for persons holding an A Certificate. The state scale for a person holding a G-12 Certificate is $423 a month. Sixty units of the approximately 175 in the state pay local supplements to all the teachers. Seventy-eight other units pay supplementary salaries to teachers in certain positions. Supplements range from $50 to $378 a year for beginning teachers with A Certificates and from $50 to $914 a year for teachers with G-12 Certificates. Opportunities in Public School administration include salaries of more than $14,000.

At present, one of the requirements for any certificate is a degree from a standard senior college. In addition certain specific courses are required which are determined by the area in which the person plans to teach. Graduate Certificates require a Master's degree and teaching experience. There are thirty-two senior colleges in North Carolina which are approved for teacher education.

For the past several years, the supply of teachers having A Certificates for elementary school and for certain high school subjects has fallen far short of the demand. Indications are that the supply will fall below the demand in additional subject areas during the next few years. There are approximately 2,300 teachers who are teaching on certificates less than the Class A Certificate.

There will be an urgent need for well-trained teachers for many years to come. It can truly be said of those who practice wise use of our resources and who teach this to the pupils of the schools, "He left this country better than he found it."

The conservation-minded teacher can stimulate activities among her pupils that will result in attitudes that the students will carry throughout their lives.

Photo by Margaret Fisler

ONE COUNTY'S TOLL | The Alleghany Rabies Epidemic

By Chester S. Davis

Reprinted permission Winston-Salem Journal and Sentinel

Part II

Although Alleghany is a small county, the toll taken by this epidemic already has been frightful.

"The loss in livestock," Dr. Fulcher says, "has been heavy. We lost 15 or 20 head in July alone . . . nine in the past two weeks that I know of. I would say that the total loss so far in livestock has run from $20,000 to $25,000. And that estimate is on the conservative side."

Dr. Martin P. Hines, State Public Health Veterinarian, N. C. State Board of Health, recently visited the county, hoping to get photographs of one mad cow. In a single day he had an opportunity to photograph 12 cows dying of rabies . . . five of them on the farm of Edward Caudill in the Whitehead community. In one case nine head of cattle were lost out of a single herd.

So far some 40 persons have either been bitten by rabid animals or so seriously exposed to the virus that they were compelled to take the Pasteur treatment.

One of them was the county sanitarian.

Late last April Lyle Jones was passing a farm, and he saw a fox come into the yard. The fox stopped at a corn crib and bit at a fence. Recognizing that the animal was mad, Jones grabbed his gun (a number of men in the county have gone armed since the epidemic broke out) and shot the fox.

The fox fell and then jumped up and scurried under a barn. Jones shot him again and then raked him out. As he brought the body out from under the barn, the fox snapped at him and bit him in the ankle. Laboratory tests showed that the fox was mad, and Mr. Jones took the series of anti-rabies shots.

On May 11 Mrs. Clifton Edwards started out to the barn to help her husband milk. Her cat, following, leaped on her leg and bit her deeply a number of times. Mrs. Edwards was hospitalized with blood poisoning, and she also took the Pasteur treatment. Tests had indicated that the cat was mad.

There have been no fatalities thus far. But luck and some hard work on the part of Lyle Jones explains that good fortune.

Awhile back Mr. Jones received a report of some children who had been bitten by a stray dog. He located the dog, killed it and sent the brain off to Raleigh for a laboratory check. The dog was found to be rabid.

Mr. Jones, who has been spending 70 per cent of his time working on rabies, patiently traced the movements of this mad dog through the community, trying to discover if others had been bitten.

He found one woman who had been chewed badly on both arms. She had not reported the bites and said, "Pshaw, it was just an old fiest a-playin." Of course, she took the shots.

There have been a number of cases where the exposure was indirect.

Last month, for example, Grover Shepherd and his boy moved a cow that had a suckling calf. Four or five weeks ago that calf died.

Mr. Shepherd didn't suspect rabies, but Dr. Fulcher did. An examination of the calf's brain showed that the doctor was right.

Grover Shepherd and his boy milked the cow while the calf sucked alongside. Both the hands of the boy and the father were laced with cuts and scratches.

They both took the anti-rabies shots. That was fortunate, too, because that cow died of rabies.

By early this spring the County Commissioners awoke to the fact that the threatening situation which had alarmed Lyle Jones and Dr. Fulcher for two years had, indeed, gotten out of hand.

One of the first steps they took to meet the epidemic was to quarantine all dogs. But that didn't work.

Mr. Jones says, "We found that in a rural county you need to have your watch dogs loose. If a fox comes into the farmyard, those dogs will get after him before he can bite a human being."

On July 6 a mad fox came into Ray Greene's yard. The family dog intercepted and killed the fox before it could attack the Greene children.

Over in the Whitehead community Mrs. J. K. Bloom's old dog has killed three foxes this summer. County Commissioner Lon Edwards has a dog that has killed three more.

Awhile back a mad fox broke up a baptizing in the Saddle Mountain community. Glenn Killon

killed the animal with a plank. That was Mr. Killon's third "score." Previously he killed one with a claw hammer, and his dog accounted for another.

When the quarantine was called off in favor of permitting the dogs to serve as protectors, the Commissioners took a second step. They hired Odell Andrews as county dog warden on a temporary (90-day) basis.

Mr. Andrews has done very little with the county's stray dog population. He has, however, gone at the root of the matter and thinned out the fox.

He and S. M. Canup, Assistant District Agent, Rodent and Predator Control, U. S. Fish and Wildlife Service, are presently operating about 400 fox traps in Alleghany County. In the past two and one-half months they have trapped close to 300 red and gray foxes.

That has helped. But the trapping program began after the epidemic started to roll. Thinning out the fox by trapping now is simply hurrying the natural process of decimation already begun by the disease.

Fortunately, as the figures on the chart indicate, this epidemic has been largely confined to the fox. It has not, as is so often the case, flared wildly among the dog population.

There are two reasons for that. Their names are Dr. O. N. Fulcher and Lyle Jones.

In 1951, when they saw the first danger signs of the approaching epidemic, those two men went to work on the county's program for vaccinating dogs with anti-rabies serum.

Before 1951 no more than 400 to 500 dogs were vaccinated annually in Alleghany County. In 1951 Dr. Fulcher gave the shots to more than 500 dogs. By 1954 he was up to 1,100, and this year he vaccinated 1,400.

"I believe," Dr. Fulcher says, "that we have vaccinated 80 per cent to 90 per cent of the dogs in the county. I know we've vaccinated more than twice as many dogs as are listed on the tax books."

The authorities say that you can control an outbreak of rabies among dogs if you vaccinate at least 70 per cent of the canine population. The figures from Alleghany clearly show that the county's vaccination program has reached at least that level. Rabies among dogs has been relatively rare. From the outset the fox has been the villain.

So far the epidemic has been confined to Alleghany. There have been a number of claims made that the high mountains and the swift mountain streams have held this epidemic in check. The implication, of course, is that these same mountains and streams will continue to confine the outbreak to tiny Alleghany County.

But that's not in the cards.

"This epidemic has taken two years to cross Alleghany County," Dr. Fulcher says.

"We still have communities in the county—the Laurel Springs community, for example—that have not been hard hit. But in my opinion their turn is coming because the epidemic is spreading."

Photo by Martin Howard

Odell Andrews, Alleghany county dog warden, sets another of the 400 traps used to thin down the county's fox population. This set is made at the end of a "tunnel-run" beneath dense rhododendron.

"This summer rabies appeared in the fox populations of both adjoining Wilkes and Ashe Counties. Rabid fox have been killed near Traphill and at several other points along the slopes of the Blue Ridge.

"We've had it here," Dr. Fulcher says. "It will continue for a while just as it has in the past. . . . a lull then an outbreak and another lull. But the epidemic is fast burning itself out in this county. When the fox population is decimated, this flareup will die out. But, by that time it will have spread to adjoining counties."

"The prospect of a widespread and virulent rabies epidemic in Northwest North Carolina is frightening. It isn't a prospect that will be solved by the arrival of cold weather. Contrary to popular belief, rabies is not a disease of the hot weather "dog days." It spreads the year around and it's spreading out of Alleghany County today.

But, if we promptly take the necessary steps, this prospect need never become a reality. We possess the tools by which we can stop this epidemic in its tracks. They are simple tools and we can . . . if we will . . . put them to work immediately. According to the men who know, here is what we must do:

1. Every county should employ a full time county dog warden and begin a vigorous program of thinning down the stray dog population. Stray dogs —and cats, too—provide a deadly reservoir in the event of a rabies outbreak.

2. State law requires that every dog should be

vaccinated. We must enforce that law. Too many unvaccinated dogs simply opens the doors of our homes to one of the deadliest of all diseases.

3. Trapping programs designed to thin out the fox population should be begun.

If counties like Ashe, Wilkes and Surry put these three programs into effect promptly, the chances are excellent that they can protect their people and livestock from an epidemic of the sort Alleghany has suffered.

But saying what should be done and then doing it are two quite different matters.

As early as 1952 Lyle Jones and Dr. Fulcher urged that Alleghany County take just such steps as these. But nothing was done until the epidemic got completely out of control. Part of the reason for the delay was ignorance.

There are many people in Alleghany County who even today refuse to believe that there is such a thing as rabies.

"Why," one old fellow says, "you starve cattle all winter and in the spring they come out poor and prey for any disease that hits them. When they die, some fellow hollars, RAYBEES, RAYBEES. There jest h'an't no such sickness."

There are men in the county who believe that all this talk about dog vaccination is plain foolishness. "Yet," Dr. Fulcher says, "we have had a number of vaccinated dogs bit by foxes that we know were rabid. So far not one of those dogs have died."

One man has said that, if Mr. Jones ever tries to vaccinate his dogs, he will kill him.

When fox in the county began to die, the fox hunters--and fox hunting is a favorite sport in the area—first said that it was distemper. Later, they said that someone was killing the fox by putting out salt fish. When they said that they glared darkly at Lyle Jones.

For a long time it was said that every fox head Mr. Jones sent off to Raleigh for examination was automatically tagged as mad. Then two wiseacres got their hands on a fox which they knew was healthy. They killed the animal and brought it in to Mr. Jones and asked him to send its brain to Raleigh for an examination.

That fox brain went in with five others, when the report came back, five of the animals were listed as rabid and the sixth was found normal.

But even that sort of thing didn't convince the folks who, because of fear, ignorance or, in some cases, plain orneriness, just didn't believe in this thing called rabies. (Curiously, some of these same folks believe that the madstone is the one sure cure for this disease they doubt even exists.)

The fox hunters have been one of the major stumbling blocks. They love their sport—as they should, for it is a grand one—and, in some cases, that love carries them past the point of reason.

According to federal trapper S. M. Canup, the fox population in Alleghany was abnormally large. Mr. Canup estimates that there were 5,000 fox in this one county when the epidemic began. The chances are good that the same thing is true throughout Northwest North Carolina.

Fox hunting is a major sport in this area. In order to assure good races, the fox hunters have imported fox and released them to join the native population. The fox hunters rarely kill their quarry. Instead, they preserve him for another race.

As a result, the fox population has grown greatly in size. Because the price of fox pelts has been low, there has been little trapping. During most of the year the fox is protected from gun and trap by state law.

When it became clear this spring that rabies was running wild among the fox in Alleghany County, Mr. Jones proposed that the fox be placed on the open list. The county's fox hunters were horrified by that proposal. Many of them fought it.

But with the help of Rep. J. K. Doughton, Alleghany was able, in the last week of the Legislature, to get the fox placed on the unprotected list. That set the stage for this summer's trapping program.

A number of the county's fox hunters have fought the trapping program. Even today some of them argue that the Commissioners should drop this program and leave the killing of the fox to the hunters.

Other counties can expect precisely this same sort of opposition from the fox hunters. To say the least, it is a short-sighted sort of opposition.

Past experience in other areas indicates that, when rabies breaks out among the fox, the disease alone will decimate the fox population. So, the fox hunters themselves have a stake in keeping the fox thinned down. For it's rabies, not trapping, that poses the real threat to their sport.

And rabies threatens the sport of fox hunting in an indirect manner, too.

Few diseases are more feared than "hydrophobia." An informed public will not tolerate the continuation of any condition that sets the stage for an outbreak of rabies.

Yet that is precisely what an abnormal fox population does.

In Alleghany there are some folks who are beginning to ask whether fox hunting is worth the loss of $25,000 worth of livestock. They wonder whether any sport is worth exposing some 40 people in a single county to a frightful death. They wonder, too, just how many tourists have stayed away from Roaring Gap this summer because of the behind-the-hand rumors about rabies.

Yet all of those things are a part of the price Alleghany has paid for its abnormal fox population.

Whether other counties in the Northwest will pay the same price in the relatively near future is going to depend on how promptly and how effectively they: (1) thin down the fox, (2) control their stray dogs, and (3) vaccinate their domestic dogs.

Santa Brought a BB Gun

by Hank Messick

Reprinted from the DURHAM MORNING HERALD

The lights of Christmas will never be the same for five patients at Duke Hospital.

Life for them will never be the same again.

Three of the patients will probably lose the sight of one eye each. The vision of the other two will forever be impaired.

BB guns are responsible.

The mother of one of the children said last night: "I hope every parent will wake up to the danger of these terrible toys. It is an awful feeling—to know too late."

The children range in age from five to 16 years. Some were hit by pellets from the guns of playmates. Others were struck when their own Christmas gift went off unexpectedly.

They come from a wide area surrounding Durham. Denny W. is from Asheboro, Benny P. came from Youngsville, Walter T. comes from Laurinburg, and Larry W. comes from Oxford.

Ronald G. came to Durham from Maryland. He was visiting here. Two days ago he was playing with four companions in a rock quarry. Two of the boys had BB guns. Without warning, Ronald said, a gun in the hand of a friend went off. A pellet struck Ronald in the eye.

Duke doctors said last night that in all probability Ronald will lose the sight of the eye.

Another of the patients was not brought to Duke for 24 hours after the accident. The injury was not too serious at first—the eye might have been saved. But constant rubbing of the injury had complicated matters. The eye cannot now be saved.

Another child was reported to have received the BB gun on Christmas. Before the day was over he had shot himself in the thumb, and an infection followed. Next day, still determined to have fun with his prized toy, he played with it again. The injured thumb slipped on the trigger and a pellet went crashing into the boy's eye. He will probably lose it.

Durham police pointed out last night that while it is legal to possess a BB gun in Durham, it is against the law to fire one. "They are dangerous things," said one officer. "They can be as dangerous as a rifle if improperly used. Children may want them, but the parents ought to have better sense."

At least one parent in Durham was ready to agree last night. "They aren't toys," she said. "It's an awful thing to see your child lose his eye—especially when you might have prevented it."

Ronnie G. lay in darkness at Duke last night. There was a pretty nurse at his bedside, and, at 16, he was old enough to appreciate it. But he could not see her.

"Santa Claus should be more careful," he remarked.

Editor's Note: This feature appeared in the DURHAM MORNING HERALD on January 2, 1955. Serious injuries from "harmless" BB guns probably outnumbered serious injuries from real firearms in North Carolina this year. After reading this story, decide for yourself how harmless these little spring-operated toys can be in the hands of careless children.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Wildlife Protection Division Adds Mobility.

As a further measure to step up law enforcement efficiency of the Wildlife Commission's wildlife protection division, the number of patrol cars in use add up to a total of 90, with plans calling for additional cars as time goes on. All of the cars are equipped with two-way radio communication to permit radio contact among patrol cars and with the radio-equipped patrol plane.

* * * * *

Wildlife Essay Contest Announced.

The N. C. Wildlife Federation, the N. C. Academy of Science, and the Wildlife Resources Commission will again sponsor a wildlife essay contest among school pupils in the 7th to 12th grades, with prizes totalling $285.00. See this and subsequent issues for complete details.

* * * * *

Subscription Campaign Outstanding Success.

When employees of the Wildlife Commission go out to sell subscriptions to WILDLIFE they get the job done. During a subscription sales campaign from August 15 through October 15, a total of 19,000 subscriptions were sold. As a result of the contest WILDLIFE'S circulation is expected to exceed 60,000 copies monthly. See elsewhere in this issue for news of subscription contest winners.

* * * * *

1956 Fishing Regulations Set.

The Wildlife Resources Commission has set the official 1956 fresh water fish regulations, and printed copies will be available at license dealers after January 1, 1956. Changes over 1955 rules include removing creel limits on panfish in and west of Granville, Durham, Chatham, Lee, Moore, and Richmond counties, with the exception of Kerr Reservoir where present rules remain in effect. Non-game as well as game fresh water fish species may not be transported without a permit from the Commission. Sea trout (weakfish) will be on the list of game fish species when taken from inland waters, and may not be sold when taken from these waters. Fish nets used in inland waters will be restricted to a 100-yard maximum and must be removed from the water on Sundays.

Quarry:

MUSKRAT

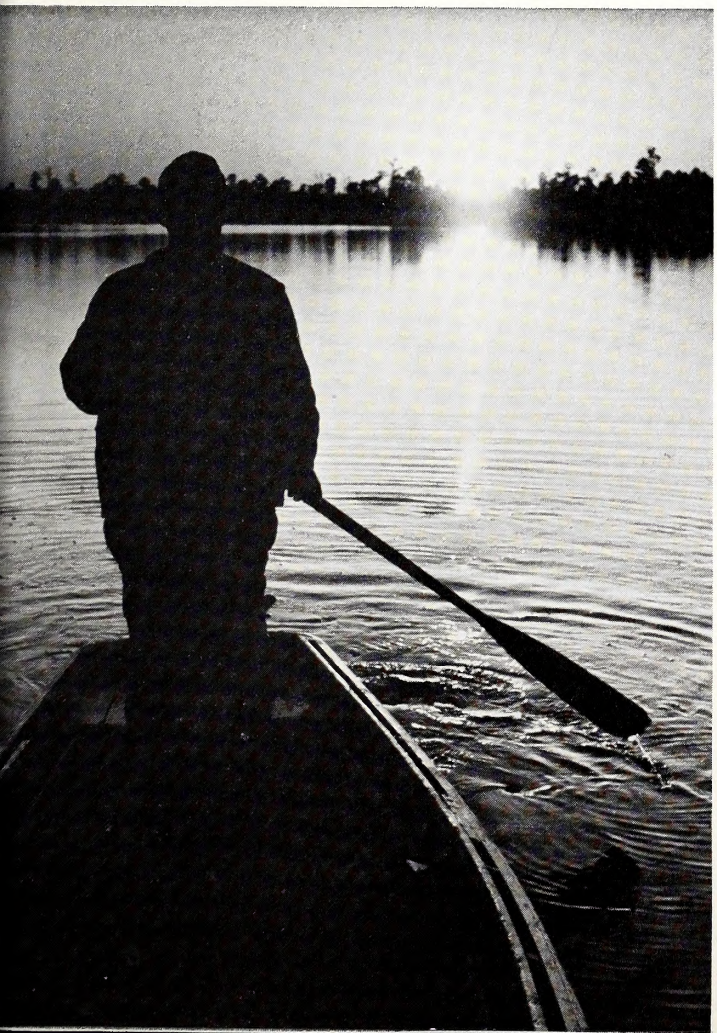
PHOTO FEATURE by JACK DERMID

Muskrat and other furbearing animals have always been a valuable natural resource to the people of North Carolina. During colonial times, furs provided warm garments for protection against winter's cold and were traded for other items of necessity. Today, furs provide a part-time income to several thousand families with the annual statewide total averaging between one-half and one million dollars. And rural youngsters find tending a trap line an exciting outdoor pastime.

Realizing the importance of furbearers, the Wildlife Resources Commission is conducting a long-range fur resources investigation under the leadership of Biologist Kenneth A. Wilson of Currituck. Although work is being done in all sections of the State, a 1,264 acre experimental marsh along the Northwest River in Currituck county is the base of operations. There techniques of marsh management, such as diking, controlled burning, and the use of herbicides for vegetation control, are tested to see what effect they might have in increasing muskrat populations. Other projects involve predator control, reproduction and food habits studies, trapping methods, and population surveys.

In order to check the results of experimental management and to compare production with other areas, portions of the marsh are trapped during open season with careful records being made of the catch. That management can pay big dividends is best illustrated by last year's harvest. Local trapper Carol Yarnes caught 319 muskrat on 172 acres (1.85 per acre) of marsh that had been diked with inexpensive sheet piling to stabilize the water level, but caught only 106 muskrat on 300 acres (.35 per acre) of natural marsh. A comparison reveals that the diked marsh produced about five times more muskrat per acre than the undiked marsh.

Let's run the Northwest River trap line with Biologist Wilson for a day of outdoor adventure. It will give you a brief glimpse into the life of the trapper and a better understanding of the world of marsh and waterways. Turn the page for more pictures.



The trapper's day begins early—before the sun peeps over the eastern shore. There are miles of marsh to cover by boat and afoot. Below: When frost is heavy, the marsh becomes an enchanted land of lacy beauty. Trees are pond pine.

The marshes of Currituck county, muskrat capital of North Carolina, are vast and lonely and the trapper frequently has them all to himself. Here Wilson tends a trap. To minimize losses and spoilage, traps are checked every day. Slender saplings mark the location of traps which would otherwise be difficult to find. Hidden in the vegetation are countless muskrat trails and houses.

When traps become unproductive, they are moved to more likely areas. Below: Sign, such as tracks, scent posts, houses, and feeding places, show the trapper the best spots to trap. Here a muskrat trail leads to a plunge hole.

Biologist Wilson pauses to check one of the dikes on the Northwest River experimental marsh. These inexpensive structures of sheet piling have proved effective in holding water at desirable levels, 5 to 12 inches, and thus improving habitat for muskrat. Last year, five times as many rats were taken on diked marsh than on undiked marsh. Other management practices include controlled burning, disking, mowing, dynamiting, and herbicidal control of vegetation.

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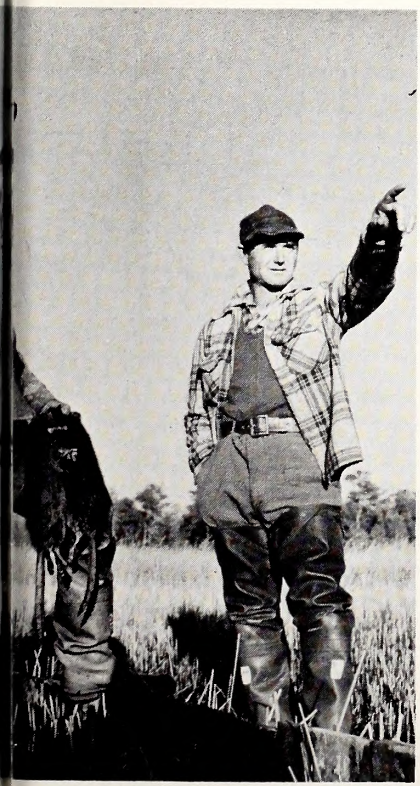
Wilson resets a trap after removing the previous night's catch. Traps are usually placed so that muskrat drown when caught. This helps prevent losses by escape and to predators. Hip boots are a necessity. Below: Closeup of trap. It is fastened to a stake to prevent the rat from carrying it away.

End of the trapper's day on the marsh. The animals are carried home for skinning.

apper Carol Yarnes met at one of the
the day's catches. It is always nice to
he lonely marsh. During the 1954-55
ıg licenses were sold in North Carolina
an estimated 77,844 muskrat, 9,677
er along with other pelts. The average
as $1.40, mink $14.50, and otter $16.00.



The CARP

by J. H. Cornell

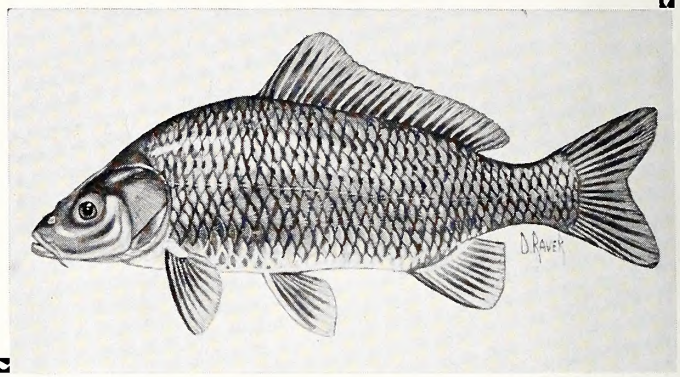


Illustration by Duane Raver

The carp is often called the European carp, the Asiatic carp, or the German carp, and it is all the same fish. It is a native of China and has been cultivated there in fish ponds for centuries. It was so highly regarded as a food fish that it was introduced into Europe in 1227. Because it was so prolific, grew so rapidly, and was so easy to raise in shallow earth ponds, it soon became an important part of the agricultural economy of central Europe.

It is believed that the first successful introduction of carp into this country was made by R. Hessel in 1877. There were 345 carp brought from Germany for the U. S. Fish Commission, and placed in rearing pools at Washington, D. C. In the next few years, young carp were distributed to nearly all of the states.

In "The Fishes of North Carolina", H. M. Smith writes, "The introduction of the carp into North Carolina waters began in 1879 and was very successful, the fish soon becoming widely distributed and abundant". After pointing out that they are particularly adapted for stocking small warm ponds which often cannot support any other fish life, Smith makes a profound observation. Writing only a relatively few years after their introduction, he says "By comparison with numerous native fishes, the carp is an inferior food; and in a state so well supplied with most desirable food fishes as North Carolina, there is no reason to believe the carp will ever become popular". He was *so* right!

Most fishermen know the carp today all too well. They know that where carp are abundant the game fish populations decline. It is a large fish, averaging several pounds in weight, with twenty-pound specimens rather common and some reaching forty pounds. In clear waters, the back is a light brassy silver and the belly is a silvery cream color. In muddy waters, the color may vary from a muddy green to a yellowish brown.

The carp is a minnow. Most of our native minnows are quite small, but this introduced Asiatic minnow is a member of the same family. The word "minnow" is often incorrectly used to designate the young of any fish. Actually, the minnows remain minnows all of their lives, regardless of size, just like the various species of the sunfishes, the perch, or the bass.

At first glance, the carp might be confused with one of our native buffalo fishes which have a somewhat similar appearance. However, the various species of buffalo fish are entirely unrelated and are members of the sucker family. The carp always can be identified by the two barbels on each side of its upper jaw.

Another introduced Asiatic minnow, very closely related to the carp, is the goldfish. Those which do not develop brilliant colors, and consequently cannot be sold to the aquarium trade, are sold to fishermen as "Baltimore minnows". Although they do not reach the same large sizes as the carp, their habits are similar. When they become established in the wild state, they can be seriously detrimental to game fish populations.

The carp and goldfish are identified from the other members of the minnow family by having more than eleven soft rays in the dorsal fin, and the dorsal and anal fins each with a strong spinous ray. The goldfish lacks the barbels of the carp. The other minnows have fewer than ten soft rays in the dorsal fin and no spinous rays in either the dorsal or anal.

HABITAT

The carp usually is found in warm rivers, streams, and lakes having mud bottoms. It likes to "root up" aquatic plants and feed on the tender roots. It is a sluggish fish and is found in the quiet pools rather than in the riffles of streams. Abundant aquatic vegetation is a requirement for the best carp habitat.

They are extremely hardy fish and can exist in polluted waters which game fish cannot endure. Turbidity is no problem to them, either, since they do not feed by sight. In fact, if the water is not muddy, their feeding habits soon will make it so. Their practice of keeping the water roiled is extremely detrimental to other fishes which feed

principally by sight—a characteristic of the game fishes.

LIFE HISTORY

Like many other fish which prefer warm water, carp become torpid in the winter. They move into the deeper waters of the pond and settle into cavities in the mud where they remain until spring. They take no food and scarcely breathe, but their metabolism rate is so reduced that they do not lose weight. This is as near as any fish comes to actual hibernation.

As the water warms in the spring, they begin to feed avidly. Spawning temperature is within a few degrees of that of the largemouth bass. In the spring of 1955 they were observed spawning in Currituck Sound in the latter part of April.

Shallow weedy swamps are the preferred spawning ground. The water may be from a few inches to two feet deep, and well grown up with aquatic grasses and sedges. A spawning female usually is accompanied by several males. They swim slowly about, often with their backs out of water, as the eggs are extruded and fertilized.

The eggs are small and adhesive. There is much splashing about as the eggs are laid, and they are scattered over the vegetation to which they adhere. Apparently this method is successful in keeping most of the eggs up out of the mud so they will not suffocate. At least, there is no further parental care. Without a doubt many of the eggs are lost in the mud or are eaten by various predators, but carp are so prolific that young of the year always seem more than adequate.

As many as 2500 eggs have been counted on a square yard of bottom on their breeding grounds. A five pound female may be expected to lay a half-million eggs in a season, and a large fish may produce two million. The eggs hatch in five to ten days, depending on the water temperature.

These carp taken from Lake Mattamuskeet were competing with waterfowl for the bottom vegetation that they both eat. Reduction of the carp population improved game fishing as well as waterfowl habitat.

Photo by Jack Dermid

Carp are mature at sixteen to eighteen inches in length. Under optimum conditions they may reach this size in two years, but probably three years is the average. In ponds where artificial feeding is employed, this growth rate may greatly increase.

Carp take both animal and vegetable food. Animal food consists of beetles, caddis flies, and other insects, as well as worms, crustaceans, and protozoans. Apparently, any animal found clinging to the vegetation or in the bottom mud is eaten. Vegetable matter includes algae, the roots and leaves of aquatic plants, and any seeds they can get. In ponds they grow fat on corn, wheat, and oats.

Apparently carp do not eat fish, except dead fish. And, contrary to general opinion, they apparently do not seek out and eat the eggs of nest-building fishes. Probably the eggs are eaten if the carp happens onto them, but there is no indication that they are deliberately sought.

IMPORTANCE

It is the carp's method of feeding that is detrimental to the other fishes. They root up the pond bottom like so many pigs in a pasture. When a desired piece of organic matter is found, the whole mouthful of mud is ejected and the fish swims forward and sucks in the food before it settles to the bottom. A school of feeding carp can turn the water just as yellow and muddy as a heavy rainstorm.

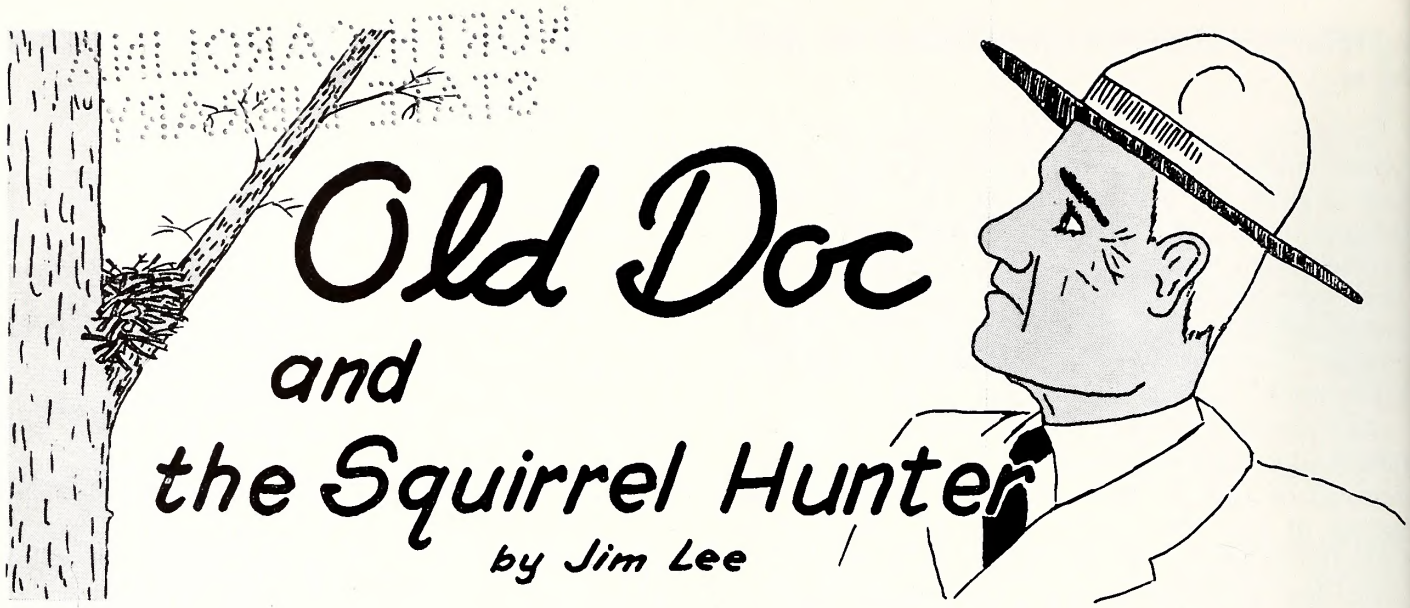
As the mud settles, it covers the eggs of other fish which have nested in the deeper water. Lacking oxygen, those eggs die. The other species are just as seriously damaged as if the carp had eaten their eggs directly.

Equally serious is the effect of carp on aquatic vegetation. The muddied water can shade out and destroy submerged vegetation completely by preventing sunlight from reaching it. Now we know that there is no ultimate source of food except vegetation. All food chains must begin with plants of some sort.

Bass eat small fish which have fed on small aquatic animals which have eaten some form of vegetation. Almost all young fish eat some form of aquatic animals such as midge fly larvae, caddis flies, Daphnia, and the like, which derived their food from plants. The carp not only destroy vegetation by making the water muddy and shading it out; they eat the plants directly, including the roots, and destroy the source of all food in that water.

This was demonstrated at the Nevin State Fish Hatchery at Madison, Wisconsin, in 1944-1945. A pond of 200 feet by 80 feet had a solid growth of sago pondweed, Anacharis, Potamogetons, and wild rice. The pond was fenced into two equal parts, and

See CARP Page 18



Old Doc and the Squirrel Hunter

by Jim Lee

The low branches that hung over the old logging trail played a discordant melody on the horsewhip antenna as Old Doc maneuvered the car over roots and straddled the deep ruts left by lumber trucks the year before. Stopping at the sawdust pile, he rolled up the window and locked the car. The woods were still that morning, with traces of frost filling the shadows of the trees. Old Doc inhaled deeply as he strapped the revolver around his waist and then watched the billow of steamy breath as he exhaled. It was good to be alive this morning even though Jane, his wife, had limited him to only three biscuits at breakfast. The belt that held his holster was a little tight, but a few more weeks of walking the woods all day would take care of that, "Some chance of getting fat," he mused, "with these boys running just to see if I can catch 'em." He thought back to Saturday's footrace with a couple of high schools boys over by Big Hen Creek. Come to think of it, maybe he wouldn't have caught them if Slim, the wildlife protector from the next county, hadn't been waiting for them around the next bend in the trail. Well, it had been like this for more years than he cared to remember . . . get fat in the summer checking fishing licenses, and run it off in the winter checking hunters.

Stepping over the slabs that lay scattered across the opening, he took the first bulldozer trail that led toward the river. A hundred yards from the sawdust pile he paused for a moment and looked at a spot on the trail where someone had scuffed aside the leaves. In the center of the bare spot was a crushed cigarette butt. "If every hunter was as concientious with his fire there'd be a lot more places to hunt," he thought. Old Carter, for example, wouldn't have ever posted his land if some squirrel hunter hadn't tossed a cigar butt in a pile of bone-dry leaves, burning some two hundred acres of good forest.

A hundred yards farther on, he stopped again. By now he was in the lowgrounds, and the tall hickories towered above the tangle of undergrowth. The dozer trail ended here. A green shotgun shell attracted his attention. Beside it was another, and a few feet farther there lay the third. He picked one up and sniffed at it. No older than Saturday. The other two smelled just as fresh. He looked around at the trees above him. Sure enough, near the top of a hickory that stood at the edge of the clearing he saw a squirrel nest. Old Doc's eyes narrowed as he peered up at the nest, and soon he saw what he was looking for. A twig, dangling unnaturally from the top of a small gum, and another branch clipped off a small ash told the story. Walking over to the base of the hickory, he had no trouble finding the discarded carcass of a baby squirrel, its stiff body peppered with holes. Doc stood there for a minute, stuffing tobacco in his pipe, while he silently cussed the hunter who had pumped three shells into the nest blindly hoping to collect a dead adult. Doc had spent twenty years as a game warden, and in his mind there was a special section reserved in Purgatory for game law violators. The guy who shoots into squirrel nests had an especially warm seat awaiting him.

His pipe lit, Doc began to poke around the clearing. Pretty soon the old warden had an idea of the kind of man he was looking for. He carried a double-barreled 20-gauge shotgun, smoked a particular brand of cigarettes, and wore a pair of gashed rubber boots. Those boots he would know if he saw them again; a deep gash in the sole of the left boot would be the payoff. Doc dropped two of the shells in his pocket . . . not as evidence but as a

reminder to himself. The empty shells joined a high-powered rifle cartridge that he had found near the entrails of a doe deer, and a piece of wire found on a river bank where someone had ruined one of the county's best fishing spots with a charge of dynamite. Only the other day he had discarded some empty .22 rifle cartridges . . . the squirrel hunter who fired them last August finally got careless and Old Doc nabbed him for hunting without a license. He couldn't pin the out-of-season hunting on him, but from the violator's reaction to the judge's lecture Doc didn't think there would be any more trouble from him. Two shotgun shells were one too many for the old warden's pants-pocket filing cabinet, so he tossed one into the bushes as he headed down the path.

Saturday dawned cold and drizzly. During the week the green shotgun shell had traveled from one end of the county to the other as Doc had checked licenses, investigated complaints, visited his license dealers in the hardware and general stores, and gave talks to school classes. Old Doc yawned as he transferred his collection from the mud-spattered pants he had worn Friday into the freshly starched pair that Jane had saved for his busiest day. A few minutes later he sat arguing with Jane about a fourth biscuit with his breakfast when he heard the beep of Slim's car outside. Dodging Jane's slap at his hand, he grabbed two of the hot biscuits and dashed for the door. Still chuckling at her husband's antics, Jane went back to the bedroom and set the alarm for seven o'clock, two hours later.

Old Doc dozed as Slim drove toward the river. Slim worked with the old protector nearly every weekend, for they had learned that by working together they could cover both their counties more adequately on the busy days. Approaching the road to the sawdust pile, Slim slowed when he saw the old car parked on the shoulder of the road. Doc sat up and rubbed his eyes, nodding assent when Slim asked if they should stop. Doc got out and crossed the road, where he studied the mud at the entrance to the logging road. Sure enough, the telltale footprint of the hunter with the gashed boot showed plainly in the fresh mud. He crossed the road again and felt the hood of the parked car.

"Not more than a few minutes, Slim. And this is one fellow that I really want to get. He's the one I was telling you about who has a taste for shooting into squirrel nests. Leave me here and go down to the old mill and work your way back up the river. I'll take my handy-talky and keep in touch with you."

A few minutes later Slim parked beside the mill and strapped his two-way radio across his back. As he was locking his car two hunters drove up and parked beside his patrol car. A father-and-son combination, Slim saw when he checked their licenses. The boy was carrying a new pump-action shotgun. Slim had the boy load three shells into the gun and then try to force a fourth into the magazine. It wouldn't fit. The boy was puzzled until his father explained that the gun had come equipped with a plug, so that it would only hold three shells for upland shooting. Wishing the pair good luck, Slim headed down the path which followed the river. Soon the rain-soaked bushes were sending trickles of cold water down Slim's neck, but he pushed on.

Old Doc, meanwhile, had tracked the hunter past the sawdust pile to the river. Squatting by the path, Doc studied the trail for a minute before seeing a faint track in the leaves that covered the path. A second after he decided that the hunter had headed toward the mill, a single shot confirmed his decision. The shot, which reverberated for a moment, was some distance away. For the first few hundred yards Doc moved rapidly, and then slowed down his pace. The dark green uniform was good camouflage, but a trigger-happy hunter who would put three shells in a squirrel nest might not hesitate to shoot anything that moved in the forest. He stopped and listened. The muffled roar of the river and a bird fussing in the wet leaves were the only sounds that he heard. Doc squatted by the trail again, and talked softly into the handset of the radio. Slim was less than half a mile away now, with the hunter between the two protectors. They decided to wait. Old Doc was itching to nab the hunter, but last week's evidence would be too circumstantial to stand up in court. Half an hour passed. An hour passed. The hunter was obviously sitting and waiting too. Doc's cold fingers caressed

the pipe in his jacket pocket, but he didn't dare light it. Once many years before he had given himself away when a pre-season hunter had smelled the aroma of Doc's pipe. After nearly two hours, the sound of another shot rolled across the low-ground. Then another shot. More sure of his location, Doc advanced another two hundred yards. Ears straining, the old warden listened for any sound that might betray the hunter.

The shot came from a hundred yards away, followed by another almost immediately. Doc hunkered down closer to the wet leaves as he heard the patter of small pellets falling from the sky. That figures, Doc thought, as he pictured the gun pointed almost straight up at a nest. The next shot punctuated his thought, and the one after that served as an exclamation mark. Doc stood up, and moved quickly through the bushes. No pussyfootin' now . . . the more noise the less chance of being shot by mistake. From twenty yards away Doc could see the look of recognition on the hunter's face when he saw the badge on the breast of the old warden's uniform. Doc cussed the extra biscuits at breakfast even before the foot-race began, but he went after the younger man anyway. It took Doc only a minute to realize that he was being out-distanced. Slim could be heard panting and puffing too when he answered Doc's radio call. Reassured by Slim, Doc slowed to a fast walk as he followed the violator. A minute later he met his quarry, running in the opposite direction with Slim hot on his heels. As their eyes met, the hunter's foot connected with a dangling grape vine, and he fell face down in the little stream of water that trickled down the path. Doc took the shotgun while Slim helped the man to his feet. A grin of satisfaction spread across Doc's face as he ejected the green shells from the 20-gauge. The pack of cigarettes that had spilled from their quarry's pocket also checked. Doc handed the empty gun back to the hunter as they headed down the river toward Slim's car.

A few hours later Slim grinned at Old Doc over his second cup of coffee, and then let his attention wander for a moment as the pretty waitress swung down the cafe aisle. Outside, the cold drizzle obscured the county courthouse across the street. Doc, fishing for his pipe, pulled the crushed shotgun shell from his pocket where he had carried it for the past week. "You know, Slim, I'm sure glad that I don't have to judge these fellows that we haul in. It would be mighty hard to keep from persecuting those that we prosecute! But I'm glad too that the Justice of the Peace is a squirrel hunter also . . . he doesn't have any sympathy for nest shooters either." Leaving the change for the coffee and a tip for the pretty waitress, they headed for the car.

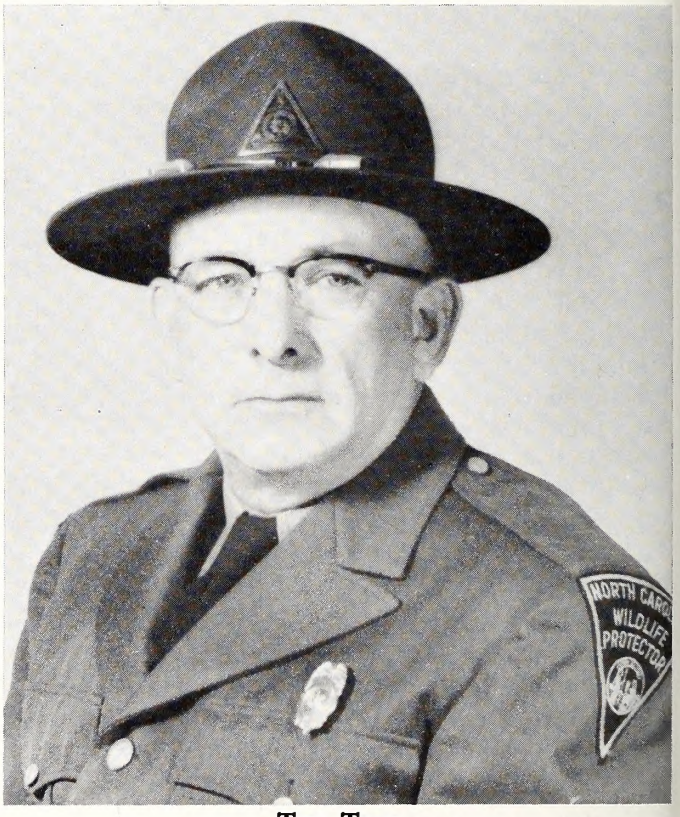
CARP

from page 15

the lower end stocked with fourteen carp. Fifty-one days later the pond was drained. The upper end was unchanged; but the lower end, where the carp had fed, had only a few straggling plants of Anacharis remaining. The wild rice and sago pondweed were completely destroyed. Apparently preferred duck foods are also preferred carp foods.

The destruction of plants used by ducks and geese from carp grazing on them was demonstrated in Lake Mattamuskeet only a few years ago. An intensive carp removal program brought back the vegetation very successfully. Salinity is being blamed for the destruction of wildfowl foods in Currituck Sound. It might very well be that carp are the culprits, and that more intensive carp removal

PROTECTOR OF THE MONTH



Tom Terry

The Wildlife Protection Division is fortunate in having among its personnel a number of veteran employees who have been with the Wildlife Resources Commission since its beginning and who had previously served as Wildlife Protectors in the Department of Conservation and Development.

One such veteran is Wildlife Protector Tom Terry, who is assigned to Washington County. Beginning his service as a Wildlife Protector on September 1, 1936, Mr. Terry has found that his experience of seventeen years' dealing with the general public in the mercantile business before entering wildlife protection work has been of great

would permit the vegetation to return to its former abundance.

An interesting study was made on East Okoboji Lake in Iowa during the period 1940 to 1951. Fishing had become very poor, and a population study showed that rough fish, including carp, were extremely abundant. The lake bottom was such that seining was practical. From 1940 through 1945 the average ratio of fish taken was 78 pounds of rough fish to each pound of game fish. From 1946 to 1951 the ratio was reduced to 13 pounds of rough fish to each pound of game fish. Fishing in the lake improved proportionately.

Similar results were obtained in the experimental rough fish removal work carried on by the Wildlife Resources Commission. Continued rough fish removal resulted in better sport fishing.

Observations by Raymond Johnson in Minnesota in 1949 indicated that if carp could be completely removed from a lake, a replacement by game fish could be expected at the rate of fifteen to twenty pounds for every hundred pounds of carp removed.

There is not much question about it. Carp are the pigs of our aquatic pastures. They may have a place in private ponds where they are raised for food, but they have no place in the public waters of North Carolina.

value to him, building good public relations between the various sportsman clubs and civic clubs, along with other organizations interested in wildlife conservation.

Mr. and Mrs. Terry have four fine children, three daughters and a son. They attend the Baptist Church, where they have been faithful members for many years.

IT'S THE LAW!

Question: Is it necessary to have a license to buy and sell raw furs in North Carolina?

Answer: Section 113-114 of the General Statutes of North Carolina states: "Every person, firm or corporation who engages in the business of buying and selling raw furs, pelts or skins of fur-bearing animals shall before beginning such business, and annually thereafter, obtain a license. . . ."

ENFORCEMENT RECORD FOR SEPTEMBER

The Wildlife Protection Division acknowledges with sincere appreciation the assistance rendered by the personnel of the other divisions of the Wildlife Resources Commission and other Law Enforcement Agencies in the enforcement activities for the month of September, 1955.

Persons checked	21,013
Total prosecutions	357
Total convictions	337
Cases not guilty	15
Cases nol prossed	5
Cases no fine levied	32
Cases where fine levied and suspended	108
Cases appealed	5
Total fines collected	$3,152.00
Total costs collected	$2,477.91

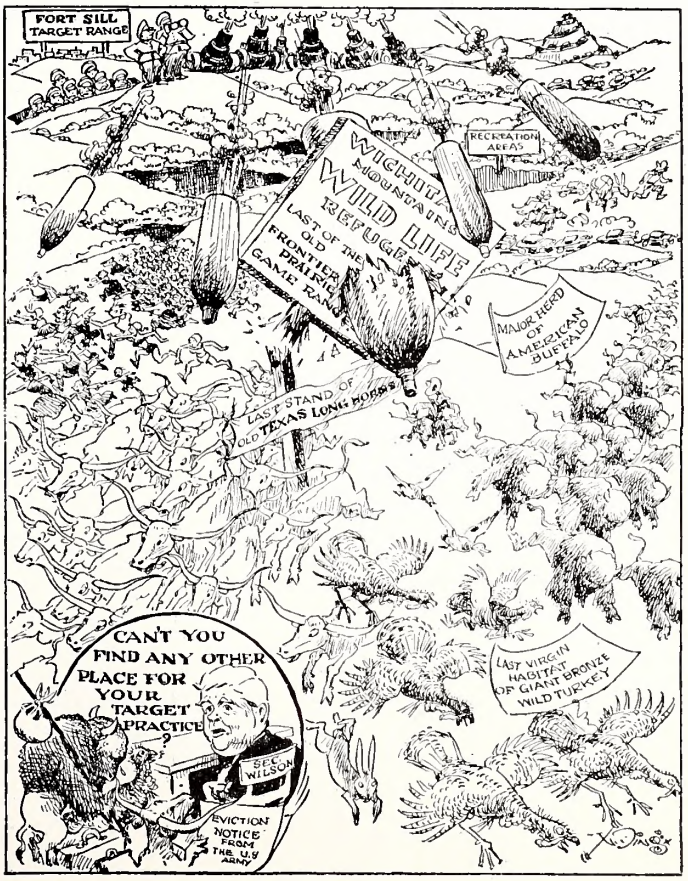
All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the Wildlife Resources Commission or its personnel.

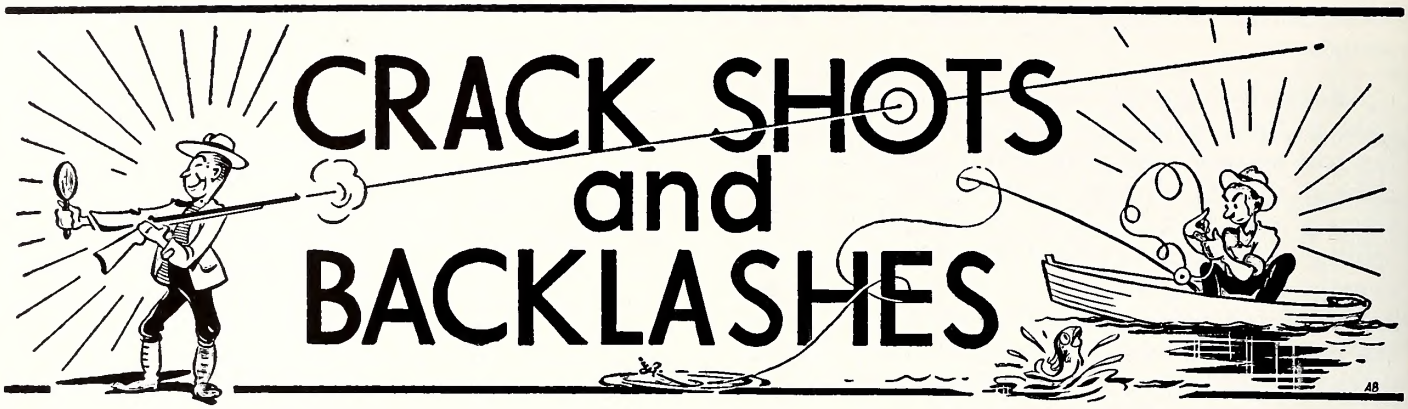
THREAT TO WILDLIFE

The pending proposal of the U. S. Army to grab title to a large part of the Wichita Mountains National Wildlife Refuge in Oklahoma and turn it into an artillery range for the military at Fort Sill has aroused a storm of protest from conservationists who know the area as the last remaining habitat of the largest specimen herd of American Buffalo, the Giant Bronze Wild Turkey, the Texas Longhorn herd, and many vanishing species of the old western plains. The U. S. Fish and Wildlife Service says there are other areas equally suited to gunnery practice and that the taking the heart out of this wilderness game refuge will mean the sacrifice of the buffalo herd and other picturesque animals of the fast-disappearing wildlife sanctuaries.

Secretary of the Interior Douglas McKay is opposed to this proposal and many are writing to him in support of his position. Likewise, many are writing to the White House and to the Secretary of Defense to oppose this transfer because it would needlessly destroy a magnificent game refuge and recreation area.

Ding Darling, former chief of the U. S. Biological Survey and a rated authority on wildlife resources, is the cartoonist.





DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

If you don't like shaggy dog stories or puns, skip along to the next item. In the season when Rudolph the Red Nosed Reindeer gets revived on the juke-box circuit, you might have fun with this one. Seems that Rudolph Rashejishlovovish Djinskosky and his wife were walking down a Moscow street the other day.

"It is snowing," said his wife.

"It is raining," said Rudolph.

"It is SNOWING!" shouted Mrs. D.

So the argument went on—It's snowing—it's raining, etc. Finally, Mr. Djinskosky could stand it no longer. "Rudolph," he said, "the Red knows rain, dear!" Get it? *Keep* it!

In the July-August issue of the LOUISIANA CONSERVATIONIST, former editor Claude Gresham tells why the Louisiana Wildlife and Fisheries Commission ended its large-scale bobwhite quail stocking program in 1952, the Wildlife Management Institute reports.

Gresham put it this way, "You're playing the horses at your local Hunter Downs and the tote board shows the odds on Mr. Bobwhite in the fifth at 1 to 200. That's right, 1 to 200—not 200 to 1. For every 100 bucks you lay on the line you can reasonably expect to get four bits back. Would you lay your hard-earned cash on Brother Bob on a proposition like that? We think not.

"Here's the way we arrived at the above odds. During the four years from 1949 through 1952 Louisiana released 144,029 pen-reared quail. All were banded prior to release, yet only 855 bands have been returned. That figures out at slightly more than half of one per cent return. The cost of releasing these birds was about two dollars each; thus about $400 of your money was spent for each quail that we can account for through band returns.

"If you think there was some slip-up in the figuring somewhere, just check the Louisiana data against that of three other States. In 1937 Pennsylvania released 8,804 hatchery birds and got only 74 band returns—0.84 per cent. Oklahoma from 1942-46 released 57,062 and got a return of 1.26 per cent. An Atlantic coast State liberated 13,500 for a 1.12 per cent return. Not a great deal of difference in the figures is there?"

Even if the band returns had been two or three times greater there would be little justification for continuing the program. Careful studies by Louisiana's game biologists revealed that pen-reared birds underwent a rapid and progressive loss after release in the field. By the end of six months, no more than three per cent of the birds remained alive.

Lookit, Norbert, gift subscriptions to WILDLIFE!

The answer to building up quail populations lies with improving food and cover conditions for the native, wild birds. This conclusion is shared by the Louisiana Wildlife department and others wherever the bobwhite is recognized as a game bird.

"Dear Sir:

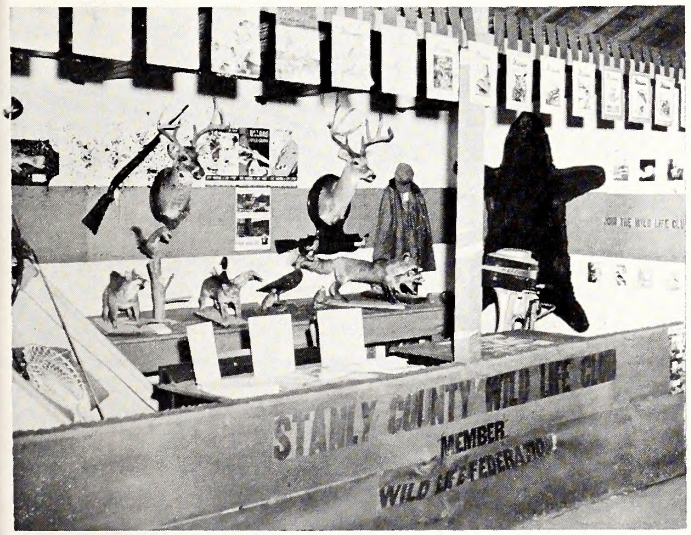
"Conservation and wildlife of North Carolina is one of the subjects of our group. Your magazine is an excellent means of teaching this subject to our fifty boys in our club.

"It is my desire to have each and every boy a subscriber to this means of instruction. So with your cooperation, if you will forward to me any advertisements that you have available, and your subscription blanks, I'll endeavor to make each of our boys a member.

Sincerely yours,
Francis M Malloy
B.O.W. Sportsmen Club No. 1093
Wilmington, N. C."

We offered Mr. Malloy's boys a special rate—20 percent discount for club subscriptions of twenty five or more. The same policy goes with any club subscription. (—Ed.)

STANLY COUNTY WILDLIFE CLUB ACTIVE



Harold Sides, County Wildlife Protector, sends us this picture of the Stanly County Wildlife Club's booth at the Stanly County Fair. Covers of WILDLIFE Magazine were used to decorate the booth, where club members sold more than 150 subscriptions to the magazine.

"Dear Sir:

"I have read with considerable interest your articles concerning the danger in petting so-called tamed deer.

"I am enclosing an article from a recent issue of the Chicago Daily Tribune, which shows a children's zoo with children playing with wild animals.

"I might call your attention to one photograph which shows a group of children petting a five-year old buck, which has complete run of the entire zoo.

Very truly yours,
Francis Hill
Cleveland, Ohio"

The five-point buck pictured had antlers in the velvet stage. We wonder how gentle he will be when the rutting season opens. Again, we point up the case of the Western N. C. man critically injured by a buck while watching some youngsters feeding it in a park. Deer make wonderful pets—until they become nuisances or downright dangerous.

The following is borrowed from the wildlife boys in Arizona, who got it from Outdoors America:

TEN COMMANDMENTS OF THE TRAIL

1. Thou shalt not employ others to kill thy game for thee, or count game killed by thy neighbor.

2. Thou shalt speak to the farm owner in a gentle grace and entreat him to permit thy hunting on his premises, lest he boot thy north end from his domain.

3. Point not thy gun toward any living thing that thou dost not wish to slay. He who faileth to observe this is a King among Imbeciles.

4. Aim not thy rod toward cattle, swine or natives within one-fourth mile of thy nose-end. A farmer's pitchfork can cause thee to eat thy meals from a mantel.

5. Unload thy gun before thou enterest an auto. This will postpone thine and thy neighbor's funeral.

6. Take not thy gun by the muzzle. Then thy days are longer and thy creditors shall not be disinherited too soon.

7. Look not into the barrel of thy gun although it is empty. The undertaker maketh a living without thy business before thy normal time.

8. Thou shalt not carry thy gun cocked. How can thy neighbor sit at thy welcome table when he is replete with buckshot.

9. Ascend not the fence with thy gun in hand. Saint Peter's job worketh him overtime and he draweth not time and a halfeth. Thy union might censure thee.

10. Observe all the above rules. The Happy Hunting Ground above, to which thou aspirest, is probably overcrowded with Indians sent there by thy Grandfather—and thy reception might leave much to be desired.

—from Outdoors America

THIS DEER WAS A FREE-LOADER

Jerry Jenkins of Morganton had an extra boarder this fall when a young buck took up with the calves in his pasture. No attempt was made to tame the deer, which will be as dangerous as a rattler come rutting season.

"Dear Sir:

"Having just returned from North Carolina, where I have had the best vacation ever, visiting parks, reserves, etc., I want to express my thanks to those Wildlife Protectors and others who work to keep your state beautiful and bountiful.

"At one of your fish hatcheries near Linville—we were very kindly escorted and informed of wildlife in North Carolina, and given a copy of WILDLIFE IN NORTH CAROLINA. I have read the book and believe it is one of the finest of its kind. Here is my subscription for two years to the best.

Sincerely yours,
R. M. Shell
El Paso, Texas"

Thanks very much, Mr. Shell. Come see us again real soon, hear?

"Dear Sir:

"I read something in one of your magazines that indicates it is a man's publication, and leaves the women out. I enjoy it as much as any man.

"Perhaps if that man would let his wife go with him hunting and fishing he would change his mind. Hope so any way.

"I hunt and fish lots. Also like to read about others who like the same sports. I have a son 9 and a daughter 14, and we all wait our turn for WILDLIFE IN NORTH CAROLINA. That shows how much we really enjoy it.

"Keep up the good work. We learn so much from "Crackshots and Backlashes." Also refer to back issues, and have all copies that I have received.

Yours very truly,
Mrs. Lewis W. Ingle
Lincolnton, N. C."

From Chapel Hill, that seat of culture and knowledge, comes this request:

"Dear Sir:

"I am a housewife and I like to do nice things for my husband. He likes mincemeat pie and I would like to bake him a nice fresh one.

"Please tell me when the season opens on minces and where is a good place to hunt them?

"Do I need a license?

Yours very truly,
(Name withheld by request)

Far as we know, no open season on minces, although some of the pie we have eaten lately should have a bounty on it. Season on skeet and blue rock is open the year around.

BOOK REVIEW

Willy Ley—SALAMANDERS AND OTHER WONDERS. 1955. The Viking Press. $3.95.

For the person who is interested in the unusual and rare either in the world of plants, animals, or man, Willy Ley's latest book will come as a real pleasure. Written with the laymen in mind, this book deals with dozens of scientific marvels. Astonishing tales of man-eating trees in Madagascar and poisonous trees in Java will intrigue the botanist, while the amateur anthropologist will be delighted with data about the unknown footprints (whether man, ape, or near-man remains a mystery) found high in the isolated Himalayan peaks. Willy Ley describes many other varied and unusual scientific wonders—the giant turtles of the Galapagos, seemingly a remnant of the long-gone Age of Reptiles; the olm, a small cave salamander that set off a world-wide controversy; the discovery of the bones of Archyopteryx, first in the great dynasty of birds. M.D.L.

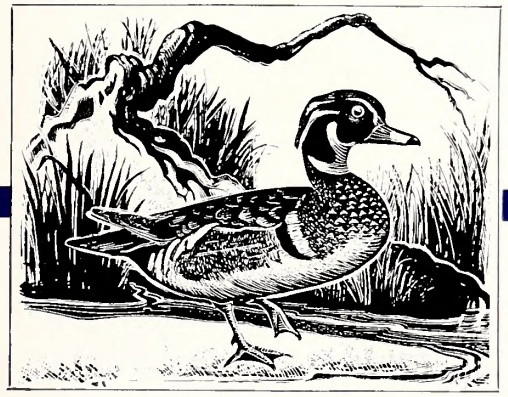
1955 Subscription Contest Winners Recognized

During the subscription campaign conducted by Wildlife Commission employees in the two-months period ending October 15, a total of 18,994 subscriptions were sold, sky-rocketing WILDLIFE's circulation to nearly 70,000. Shown left-to-right below are the top salesmen, Stanley R. Johnson with 789, J. D. McLean with 1,819, A. Eugene Jones with 2,784, and Oscar Chadwick with 3,096. Commission chairman E. D. McGougan is shown awarding Chadwick his prize of $50.00. Other prizes were $25.00, $15.00, and $10.00.

Photo by Jim Lee

ANNOUNCING.....

ANOTHER *Wildlife* ESSAY *Contest*



Teachers....

ENTER YOUR PUPILS TODAY!

$100.00 FIRST PRIZE

75.00 SECOND PRIZE

50.00 THIRD PRIZE

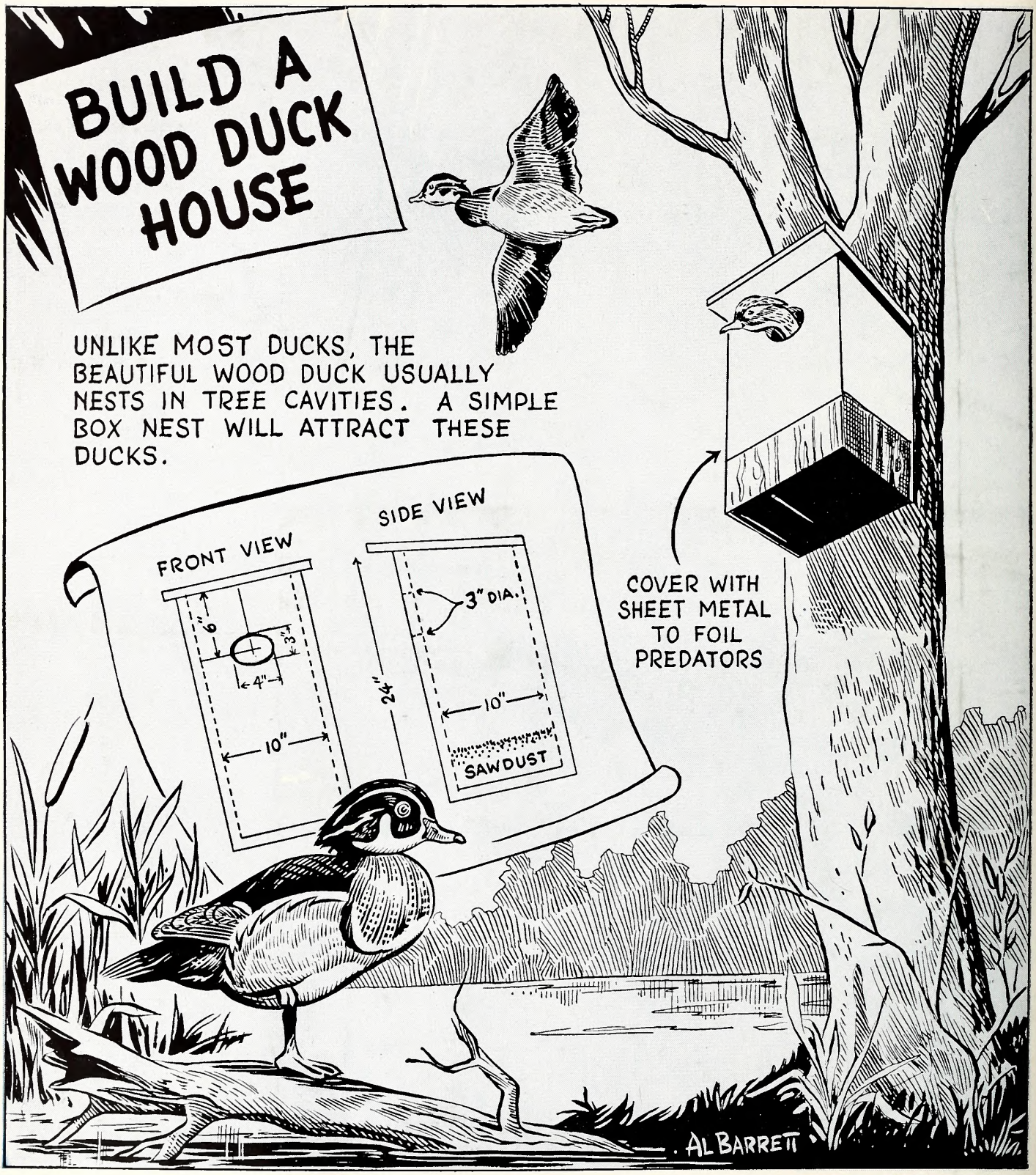
PLUS SIX $10.00 PRIZES FOR THE BEST ESSAYS FROM EACH OF THE SIX ACADEMY OF SCIENCE DISTRICTS

CONTEST RULES

1. All pupils in North Carolina schools in the 7th to 12th grades will be eligible.
2. Only one essay may be submitted by any one student.
3. The topic of the essays will be: THE IMPORTANCE OF WATER RESOURCES TO WILDLIFE.
4. Essays must be legibly written, or if typed, be double spaced.
5. Essays may not be longer than 1,000 words.
6. Schools will be responsible for selecting the four best essays submitted and forwarding them to district science fair chairmen, together with a statement of the number of pupils participating, not later than March 15, 1956.
7. Each essay submitted must show the pupil's name, home address, grade, teacher's name, home address, and name of school. Advance registration will not be necessary.
8. Judging of essays will be at district science fairs of the Academy of Science.
9. The sponsors of the contest reserve the right to make any necessary amendments to the contest rules.
10. Awarding of the first three prizes will be done at the annual meeting of the N. C. Wildlife Federation in the fall of 1956.

Sponsored jointly by the
N. C. Wildlife Federation
N. C. Academy of Science
N. C. Wildlife Resources Commission

Watch for further announcements in Wildlife in North Carolina



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